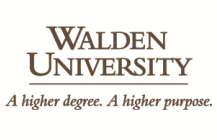

2018

Using Social Cognitive Theory to Predict Obesity Behaviors in Hispanic American Children

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This is to certify that the doctoral dissertation by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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2018

Abstract

Using Social Cognitive Theory to Predict Obesity Behaviors in Hispanic American Children

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MA, Central Michigan University, 2001

BSN, Howard University, 1994

Dissertation Submitted in Partial Fulfillment

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Abstract

Childhood obesity is a growing challenge in the U.S. Hispanic American population. There is a need for evidence-based approaches to combat this problem. Social Cognitive Theory (SCT) is one such approach. The purpose of this study was to examine the extent to which selected constructs of SCT (expectations, self-efficacy, self-efficacy in overcoming barriers and self-control) could predict five childhood obesity prevention behaviors, namely time spent on television watching, time spent on physical activities, water consumption, consumption of fruits and vegetables, and meal portion size among Hispanic American children. A quantitative cross-sectional research design was employed for this study. Data were collected from a sample of 235 Hispanic American children between the ages of 11 and 15 years, using a cluster sampling method. A reliable survey instrument used for data collection in this study Promoting Healthy Lifestyle Survey, was developed and validated by Sharma, Wagner, and Wilkerson (2014) from three community churches in three different Georgia counties. Multiple regression analyses were used to determine the predictability of the independent variables, which were the constructs of SCT, and the dependent variables, which were the five behaviors. Significant SCT predictor of television-watching behavior was expectations ($p = 0.004$; adjusted $R^2 = 0.08$). The statistically significant physical activity SCT predictor was self-efficacy ($p < 0.001$, adjusted $R^2 = 0.24$). It is envisaged that the results of the study will assist public health education practitioners in developing concerted interventions among Hispanic American children and families designed to reduce childhood obesity facilitating a positive social change.

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I give all glory to God for His word which states that I can do all things through Christ that strengthen me. This project testifies this word of God. My four wonderful children who played a role one way or another both financial supports and encouragements during this journey. Friends I made through this journey and the ones that left me because I did not have time for them, I thank them.

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Chapter 1: Introduction to the Study

In the contemporary public health environment, overweight and obesity have become major concerns for public health advocates (Ogden, Carroll, Kit, & Flegal, 2012). Obesity is abnormal accumulation of body fat—usually 30% or more over body mass index (BMI) or an individual's ideal body weight (Centers for Disease Control and Prevention [CDC], 2015a. Excess weight was calibrated in terms of fat, muscle, bone, water, or a combination of these factors using a body mass index usually expressed in units of 225 kg/m or greater (Centers for Disease Control and Prevention [CDC], 2015a). The percentage of children ages 5 to 11 years who were obese increased from 7% in 1980 to nearly 18% in 2012 (CDC, 2015a), and such increases have become problematic and costly for children under 17 years (Ng et al., 2013). Munro (2015) agreed that healthcare spending which related to obesity in the United States was approaching $10,000 per person annually.

Background

According to the CDC (2012), 36% of non-Hispanic American/Latino African American children ages 9-10 years are clinically obese in the United States. There are a great racial and ethnic differences in the prevalence of overweight both children and young youth in United States. Similarly, 30% of Hispanic Americans, and 17% of children 2 to 19 years of age are also clinically classified as obese (CDC, 2010). In 2007, no state in the United States was able to meet the Healthy People 2020 objective to reduce obesity by 15%. Healthy People is a program of a nationwide focuses on health promotion and disease prevention by the United States Department of Health and Human Services. Lack of physical activity and sedentary lifestyles are some of the assumed

causes of individuals becoming overweight. This study used social cognitive theory (SCT) to predict obesity behaviors in Hispanic American/Latino children in three regions in Georgia. The Hispanic American/Latino community is burdened by limited resources to provide their children with coping strategies in which daily food preparation plays a vital role. The Hispanic American community's beliefs regarding good parenting skills, well-being, and body concepts are all practices derived from cultural ideas and values (Andes et al., 2012). Andes et al. (2012) noted that the neighborhood food environment leads to poor food selections, resulting in family activities that inevitably lead to obesity in children from this community. Knowledge of childhood obesity and its resulting challenges is crucial to public health practitioners who must evaluate and implement programs that incorporate real nutrition and address obesity.

Nutrition is the key to maintaining optimal health and preventing chronic diseases. Daily consumption of the recommended five servings of fruits and vegetables is a significant factor in reducing chronic disease risk (Stephens, 2011). Promoting healthy eating behaviors among adolescents is important, as an adequate and a balanced diet helps promote long-term healthy behaviors (Larson, Neumark-Sztainer, Story, van den Berg, & Hannan, 2011). Unhealthy eating habits are not confined only to United States youth.

Problem Statement

Increased incidence of obesity and its domestic and allied effects are becoming a public health challenge in the state of Georgia. The medical consequences of childhood obesity are many, starting with short-term effects, such as risk factors for cardiovascular disease, (e.g., high blood

pressure and high cholesterol). Obesity also results in pre-diabetes, bone and joint problems, and long-term effects such as heart disease, type 2 diabetes, stroke, and cancer of the breast, colon, esophagus, kidney, pancreas, cervix, and thyroid (CDC, 2015b; Kelly et al., 2013; Ogden, 2012).

In 2012, the state of Georgia ranked 18 out of 50 states in obesity rates among two- to five-year-old children from low-income families (CDC, 2013a). The breakdown of obesity rate for this age bracket by race in Georgia for the same year was 26.2% Caucasian, 28.1% African American, and 37.2% Hispanic American (CDC, 2013a). Per Davis, Cook, and Cohen (2010), children in lower income brackets suffer more health problems linked to obesity than their counterparts in higher-income brackets. Researchers have performed elaborate studies on childhood obesity with emphases on etiological issues consisting of improper nutrition, poor lifestyle choices such as lack of exercise or sedentary lifestyle, and lack of amenities such as walking paths or parks. Poverty environments are not conducive to reducing obesity in children (Ogden et al., 2012; World Health Organization [WHO], 2014). Additionally, Glenn et al. (2012) argued that low-income Hispanic American/Latino families are prone to feeding their children with unhealthy foods.

The purpose of this research was to examine the extent to which selected social cognitive theory constructs (expectations, self-efficacy, self-efficacy in overcoming barriers, and self-control) applied with the behaviors of: Moderate engagement in daily physical activity of 30 minutes. Limit on television viewing to two hours per day. Increasing water consumption to eight glasses per day. Limit on portion sizes. Increasing fruit and vegetable intake to five or more servings per day. Limit on portion sizes. Increasing fruit and vegetable intake to five or more servings per day.

Purpose of Study

A quantitative cross-sectional design was used to ascertain the extent to which the SCC constructs of expectations, self-efficacy, self-efficacy in overcoming barriers, and self-control predict duration for television viewing, period of physical activity, consumption of fruit and vegetables, consumption of water, and portion size for upper elementary Hispanic American children. The study was intended also to provide opportunities for investigators to explore avenues of initiating, encouraging, and enhancing health-promoting strategies to prevent or curb obesity in children. Carrying out the study might provide more information that physical educators or health advocates could use in remediating the dangers of childhood obesity in Hispanic American communities in some Georgia counties.

Research Questions

The following research questions were used to guide this study:

RQ1: To what extent if any did the select SCT predict television-watching behavior among the subject population?

$H_0$1: Select SCT constructs did not predict television-watching behavior among the subject population.

H_a1: Select SCT constructs do predict television-watching behavior among the subject population.

RQ2: To what extent if any did the SCT constructs predict physical activity behavior among the subject population?

$H_0$2: Select SCT constructs did not predict physical activity behavior among the subject population.

H_a2: Select SCT constructs did predict physical activity behavior among the subject population.

RQ3: To what extent if any did select SCT constructs predict water consumption among the subject population?

$H_0$3: Select SCT constructs did not predict water consumption among the subject population.

H_a3: Select SCT constructs did predict water consumption among the subject population.

RQ4: To what extent if any did select SCT constructs predict fruit and vegetable intake among the subject population?

$H_0$4: Select SCT constructs did not predict fruit and vegetable intake among the subject population.

H_a4: Select SCT constructs did predict fruit and vegetable intake among the subject population.

Theoretical Framework

This theory social cognitive was used to predict behaviors such as physical activity, television viewing, water consumption, and fruit and vegetable intake among Hispanic American/Latino children. The primary constructs of the social cognitive theory are self-efficacy or behavior-specific confidence in one's ability to influence one's habit, expectations about expected costs and benefits for different health practices, and self-control or personal goals

(Bandura, 1986; Glanz et al., 2014). Self-efficacy was a fundamental requirement for behavior change. Expectations are of three kinds and pertain to physical outcomes, social results of approval and disapproval, and positive and negative self-evaluative reactions. Expectations are a function of outcome expectations or anticipatory results of a behavior and outcome expectancies or the value that a person places on a given outcome. Self-control involved setting goals that are proximal and distal and adjusted the course of change (Sharma & Romas, 2017).

The purpose of this study was to examine the extent to which selected social cognitive theory constructs (expectations, self-efficacy, self-efficacy in overcoming barriers, and self-control) predicted the five behaviors of daily moderate intense 30-minute physical activity. The research also examined limited television viewing to 2 hours per day, increased water consumption to eight glasses per day, limited portion sizes, and increased fruit and vegetable intake to five or more servings per day for upper elementary Hispanic American children.

Nature of the Study

A quantitative approach was applied to construct, collect, and analyze data from participants in the study population, a sample drawn from Hispanic American children ages 11-15 from three community churches in different counties (Clayton, DeKalb, and Gwinnett) in Georgia. There was no current research that evaluated the relation between obesity and urbanization among Hispanic American children in these three counties in Georgia. The primary data collection instrument was conducted with a survey questionnaire. The subjects of this study were Hispanic American/Latino children attending churches in these three counties between the ages of 11 and 15. This researcher obtained parental demographic and socioeconomic data through a

questionnaire tool, Promoting Healthy Lifestyles Survey, that was validated for African American children.

The primary constructs of the SCT are self-efficacy, expectations about expected costs and benefits for different health habits, and self-control or personal goals (Bandura, 1986; Glanz et al., 2014). Self-efficacy was a fundamental requirement for behavior change and refers to confidence in one's ability to influence one's habits. Expectations are a function of (a) outcome expectations or anticipatory results of a behavior and (b) outcome expectancies, or the value that a person places on a given outcome. Self-control involves setting goals that are proximal and distal and adjust the course of change (Sharma & Romas, 2017). Regression analysis was used to determine the association between the independent and the dependent variables of this study.

Definitions of Terms

The following operational words were employed in this study:

Body mass index *(BMI):* is a number calculated using a person's weight and height to derive a body fat percentage to determine whether an individual is overweight or obese, calculated with 18.5 (kg/m2) to 24.9 (kg/m2) being normal weight, 25.0 (kg/m2) to 29.9 (kg/m2) being overweight from 30.0 (kg/m2) and above as being obesity.

Expectations: Bandura (1986) defined expectation as the extent of value that a person places on an outcome.

Fruits consumption: This measure refers to the number of servings of fruits that participants have consumed in the preceding 24 hours.

Outcome expectations: Bandura (1986) defined outcome expectation as the anticipated results of a behavior.

Outcome expectations of physical activity: These are the anticipatory effects of behavior (Bandura, 2004). The outcome expectations for physical activity were measured per participant's exercising for 30 minutes a day. The measurement was premised as follows: Never (0), Hardly ever (1), Sometimes (2), Almost always (3), Always.

Physical activity: This phrase refers to the number of minutes of self-reported exercise in which an individual had engaged in the preceding 24 hours.

Portion size: This phrase refers to the quantity of a food that a participant consumes at a meal.

Self-control for physical activity: This term was defined by (Bandura, 2004) as the ability to set personal goals and to self-reward oneself on accomplishing those goals. Self-control for physical activity is exercising every day for 30 minutes at home, rewarding oneself with something, and being measured for exercising on a scale of not at all sure (0), slightly sure (1), moderately sure (2), very sure (3), completely sure (4) with a possible range of 0-8.

TV watching: This term is operationalized as hours spent watching television in the preceding 24 hours.

Vegetable consumption: This term is operationalized as the number of servings of vegetables consumed in the preceding 24 hours.

Water drinking: This term is operationalized as the number of ounces of water consumed in the preceding 24 hours.

Significance of the Study

The consensus of the research data is that Hispanic Americans/Latinos are among the racial or ethnic minority communities of children in the United States experiencing the highest rates of obesity within their representative age groups (Andes et al., 2012). This prevalence of increasing obesity among Hispanic American/Latino children is due to certain behavioral and developmental challenges exacerbated by cultural and language barriers (Andes et al., 2012).

Further, Hispanic American children face poorer developmental outcomes resulting in dropping out of school, substance abuse, and an inability to afford adequate health insurance which ultimately leads to a lack of access to health care. The findings of this study may support the development of early stage interventions which may improve parental awareness through education regarding the value of healthier childhood and adolescent lifestyle. The burden of chronic disease attributable to childhood obesity carries enormous health and economic implications. According to CDC (2017) the National Center for Health Statistics, in 2002, employers and privately insured families spent $36.5 billion on obesity-related diseases, an increase of $3.6 billion from 1987 representing 9.6% of total U.S. healthcare spending. The prevalence of obesity. Direct and indirect costs of obesity are estimated at $117 billion and represent 5-7% of all U.S. healthcare costs. A figure that is most likely underestimated. Of these costs, $127 million are related to pediatric inpatient hospital costs (Colditz & Stein, 2012). Children with a secondary diagnosis of obesity upon hospital admission incurred significantly higher hospital fees and longer lengths of stay for common pediatric hospitalizations (Woolford, Gebremariam, Clark, & Davis, 2012).

Increasing incidences of childhood obesity coupled with an increase in the aging population in the U.S. will likely soon stress healthcare resources beyond current and predicted estimates. Healthcare costs will continue to rise with the rising rate of childhood obesity, especially in the absence of a reasonable cure or prevention. In economic rationing, The U.S. has limited resources. the discovery of influential factors parents uses to promote the health of overweight and obese children will direct educational efforts and interventions grounded in theory and supported through research. The findings of this study may provide further opportunities for investigators to initiate, encourage, and enhance health-promotion strategies. The finding of this study may guide health promotion interventions that address the escalating and burdensome healthcare costs associated with obesity and obesity-related diseases.

Assumptions

Secondly, the researcher assumed that the participants would answer the questionnaire truthfully. It was assumed that the participants would answer the questionnaire truthfully and would be able to recall time or quantity measured within 24 hours prior to the admiration of questionnaire. The researcher hoped to elicit correct responses by assuring members that they would be anonymous, and the researcher would hold the participants' responses confidentially in compliance with university Institutional Review Board (IRB) requirements.

Limitations

Study limitations included Hispanic American/Latino males and females ages 11-15. As such, the results may not be generalizable to other races, ethnicities, ages, or grade levels. Further,

there is a chance that respondents may not correctly report the length of time watching television, the quantity of food eaten, the amount of water drank, or the specific vegetables requested to be eaten for the survey. These limitations could lead to possible underestimations or overestimations of the behavior data.

Delimitations

The scope of the study was limited to children ages 11-15 from DeKalb, Clayton, and Gwinnett Georgia counties. The respondents might be bias with positive answers. The limitation of the being monitored while completing the survey. Possible time and place could affect the responses.

Summary

A child who is overweight or obese presents the parent with major economic, social, and cultural challenges. Previous studies helped to create the foundation for this research, which will aim to prevent childhood obesity in Hispanic American communities. The outcomes of this study will provide invaluable information to be used by parents and professionals in education and healthcare to assist in the pursuit of healthy children.

The results of the study intend to promote health education in upper elementary school children in the form of a regular program of (a) moderate to intense physical activity of 30 minutes or more daily, (b) a decrease in the length of television watching to 2 hours a day, (c) drinking at least 8 glasses of water a day, and (d) eating at least five servings of vegetables and fruits a day. As Glanz et al. (2015) asserted, “The concepts of social cognitive theory provide ways for new behavioral research in health education” (p. 165).

The findings of this study hold the potential for proper interventions at an early stage, bringing awareness to parents through education regarding a healthy lifestyle. These interventions, if properly implemented by health educators, physical education teachers, and parents, could contribute to reducing the high healthcare costs. The study findings may offer healthcare providers the knowledge and insight to assist parents in promoting healthy lifestyles for their children.

Chapter 2: Literature Review

As stated in chapter 1, the goal of this quantitative cross-sectional study was to ascertain the extent to which the SCT constructs utilized overcame self-control barriers when predicting the duration of daily television viewing, the duration of daily physical activity, the daily consumption of fruits and vegetables, the daily consumption of water, and meal portion size for upper elementary Hispanic American children three community churches in Clayton, DeKalb, and Gwinnett Georgia counties.

According to the CDC (2016), the increasing prevalence of childhood obesity has become a significant health concern for the Hispanic American and Latino community in the United States. Zoorob et al. (2014) asserted that investigation of the linkages between physical movement, diet, and obesity lead to information that instructors, dieticians, and curriculum supervisors could use to mediate and decrease the dangers of obesity. Despite the research confirming these linkages, the growth of childhood obesity continues and requires further research to determine the various behavioral, genetic, and social components associated with obesity.

This literature review focused on the association between race, diet, and physical activity among Hispanic American children. It is intended to explore the increase and incidence of childhood obesity, particularly among the Hispanic American and Latino community, and by extension among the broader communities across the United States. The medical consequences of childhood obesity include short-term effects, such as risk factors for cardiovascular disease (e.g., high blood pressure and high cholesterol), prediabetes, bone and joint problems, and long-term

effects such as heart disease. Child obesity also predisposes children to Type 2 diabetes, stroke, and cancer of the breast, colon, esophagus, kidney, pancreas, cervix, and thyroid (CDC, 2015b; Kelly et al., 2013; Ogden, 2012).

In 2012, Georgia ranked second of 50 states in obesity rates among two to five-year-old children from low-income families (CDC, 2013a). The ethnic breakdown for this age bracket was 26.2% Caucasian, 28.1% African American, and 37.2% Hispanic American (CDC, 2013a). According to Davis et al. (2010), people in lower income brackets suffer more health problems linked to obesity than their counterparts in higher-income brackets. Ogden et al., (2012) concluded that there is a correlation between childhood obesity and etiological issues including improper nutrition, poor lifestyle choices, lack of exercise or an intentional sedentary lifestyle, and a lack of amenities such as places to walk. The literature drew a connection between inadequate dietary intake, lack of exercise and recreation facilities, and increased childhood obesity among the Hispanic American community in the state of Georgia (see Ogden et al., 2012; WHO, 2014). The CDC (2013a) showed that about 71% of adults over 18 years old only in DeKalb County, Georgia consume less than five servings of fruits and vegetables daily (BRFSS, 2016). These findings are causes for public health concern due to the likelihood of these adults being a negative role model for healthy eating lifestyles in adolescents and children at their respective homes and are also less likely to provide adequate fruits and vegetables for their young ones in DeKalb County communities. The BRFSS project expectation is to increase fruit and vegetable intake for children ages 2-5 years old only in DeKalb County.

The increasing frequency of childhood obesity in the Hispanic American and Latino community in the state of Georgia is the focus of this study. The purpose of the research was to examine the extent to which television viewing, physical exercise, water consumption, and meal portion controls could affect the assumptions of the survey and by extension decrease childhood obesity in the Hispanic American and Latino community in the counties specified in the study. The predictors were age, gender, race, the number of times a survey subject was taught about healthy eating at school, the number of times a survey subject was instructed to do physical activity/exercise at home, the likelihood each survey subject would complete each behavior, and the self-efficacy and self-control required to perform each behavior. The following changes in behavior are the desired outcomes of the study. (1) Moderately intense physical activity of 30 minutes daily. (2) Decreased television viewing to two hours per day. (3) Increasing water consumption to eight glasses per day. (4) Reducing food portion sizes. (5) An increase in fruit and vegetable intake to five or more servings per day.

Literature Search Strategy

I employed a matrix method to review the literature. The matrix method is a technique for organizing and reviewing research literature (Garrard, 2007). The first step in the use of this process was to create a paper trail to keep track of where a search had been conducted to find materials relevant to the study. The next step was to organize the most relevant documents for review. The third phase was to use the review matrix to extract information from the documents. In addition, I wrote the review of the literature and constructed notes that linked to relevant articles.

I used a broad range of keywords: *Diet*, *television viewing*, *ethnicity*, *race*, *subjective social elements*, *weight*, *obesity*, *obesity*, *physical movement*, and *youth.* I searched for articles from databases such as Medline, SAGE, CINAHL, and ProQuest. I scanned through materials and examined their purpose, method, population tested, type of study, relevance to the general problem, specific hypotheses relevant to this study, and general background importance to this study. I created references during the process of review for later use in the study.

Epidemiology of Obesity Risk Factors

As noted by the CDC (2016a), the condition of being overweight occurs when people consume a greater number of calories than their body metabolism requires. Overweight conditions worsen when people have inactive lifestyles and do not participate in sufficient physical activity to burn off the excess calories. Prevalence of obesity in the United States has increased over the past 30 years (CDC, 2013; Schauer & Buruera, 2016). The CDC (2013) asserted that 66% of American adults and 33% of children were obese as reported in 2003 and 2004. The CDC (2016) stated that 33% of American adults are overweight and are 24 times more obese than adolescents. The CDC (2016) reported that overweight increases an individual's risk of numerous diseases, including diabetes, stroke, heart attack, certain cancers, and various coronary illnesses. According to the CDC (2015), being physically active and consuming fewer carbohydrates are key determinants of weight fluctuation, yet these are not the only determinants. Indicators of future obesity are often evident as early in life as toddlerhood. In a longitudinal investigation of ethnic differences in 2- to 12-year-olds, Nader et al. (2012) found that children who were overweight at any time during grade school had an 80% chance of being overweight by age 12. Of children who

were above the 50th BMI percentile for their sexual orientation and age (well beneath the 85th percentile cutoff for being overweight), 40% were obese by the time they reached the age of 12. Around 30% of obese pre-adult females and 10% of pre-adult males were overweight as adults (Howie & Pate, 2012). Freedman et al (2011) showed a higher overweight among children remaining at or beyond the 85th percentile for age and sexual orientation using a body mass index.

The frequency of obesity has increased at all population age levels, as indicated by the National Health and Nutrition Examination Survey (NHANES) is a survey research program conducted by National Center for Health Statistics (NCHS) to assess the health and nutritional status of adults and children in the United States and to track changes over time. The relationship between obesity and income differs by ethnicity and race (CDC, 2016a; Hartline-Grafton, 2016). Obesity among African Americans and Spanish/Latino American males diminished for incomes at more than 350% above the poverty level and at 130% below the poverty level (CDC, 2015). Specifically, 44% of African American males with earnings above 350% of the poverty level were obese, contrasted with 29.9% of African American males 130% below the poverty level (CDC, 2011). Also, 40% of Spanish/Latino American males with earnings 350% above the poverty level were obese, contrasted with 29.9% of those 130% below the poverty line. As indicated by the CDC (2011), obesity among females expanded as pay diminished. Twenty-nine percent of females with earnings 350% above the poverty level were obese, but 42% of those with incomes 130% below poverty level were obese (CDC 2011). The CDC (2016) showed that the pattern was comparable for non-Hispanic American Caucasian, African American, and Spanish/Latino American females.

Hispanic American Caucasian females with incomes 350% above the poverty level had a 27.5% obesity rate (CDC, 2017).

The pervasiveness of adolescent obesity requires an examination of the relevant components of excessive weight gain (Tolfrey & Zakrewski, 2012). Based on self-report obesity levels are 36% for non-Hispanic Americans, 30% for Hispanic Americans, and 17% for children ages 2 to 19 years (CDC, 2015a). The CDC (2011) reported that there were significant racial and ethnic differences in the prevalence of obesity in the United States among children and adolescents. Obesity was more prevalent among Hispanic American males' ages 2 to 19 years than among Caucasian males. Obesity among African American females was greater than obesity in Spanish/Latino American females (CDC, 2013).

Lack of physical activity and sedentary lifestyles can result in obesity (Lee, 2015). College students are at risk for obesity because of their eating styles and lack of physical activity. Research has shown (Lee, 2015) that increased physical activity helps to eliminate weight disparities among college students (Lee, 2015). According to Lee (2015), there is a decline in physical activity for people ages 18 to 65, an effect differentiated by race and ethnicity. For example, a greater percentage of Caucasian and non- Spanish/Latino American adults age ranges meet physical activity recommendations than do African Americans (Lee, 2015). Lee showed that this pattern holds true for adolescents in grades 9 through 12 as well.

Smith (2011) differentiated the relationship between and among race, diet, and physical activity in young ages. Smith (2011) observed that the rate of obesity in grown-ups had multiplied and that the rate of adolescent obesity had tripled. His research also showed a connection between

obesity and increases in hypertension, pre-diabetes, coronary illness, joint pain, and other diseases. Among the factors that contribute to excessive caloric intake, Smith noted, were excessive snacking, eating out, inactivity, and poor nutrition.

Stephens (2011) observed that an individual's nutrition is vital to maintaining optimal health and preventing chronic diseases. His recommendations included consumption daily of five servings of fruits and vegetables as a means for reducing chronic disease risk. Larson, Neumark-Sztainer, Story, van den Berg, and Hannan (2011) asserted that promoting healthy eating behaviors among adolescents is important, as this can encourage healthy habits on a long-term basis. Unhealthy eating habits are confined not only to United States youth. According to a survey by Stephens, McNaughton, Crawford, MacFarlane, and Ball (2011), only 5% of adolescents' ages 14 to 16 years met the Australian guide to healthy eating recommendations for vegetables, and only 1% met the recommendation for eating fruits. Project EATS-I and Project EAT-II showed a decline in fruit and vegetable consumption during the transition from early to mid-adolescence (Larson et al., 2011). Stephens et al. recommended further study of the factors that influence adolescents' nutritional intake.

The CDC (2016) observed that 13.9% of students were obese nationwide in 2015. Among all male students, the pervasiveness of obesity was greater (16.8%) than it was for all female students (10.8%). More specifically, the frequency of obesity was larger amongst Caucasian and Hispanic American males (15.6% and 19.4% respectively) than for Caucasian and Hispanic American female students (9.1% and 13.3% respectively). The incidence of obesity for 9th, 10th, 11th, and 12th grade male students (15,4%, 18.2%, 18.4%, and 15.0% respectively) exceeded the

incidence for than 9th, 10th, 11th, and 12th grade female students (10.3%, 12.1%, 10.2%, and 10.5% respectively).

Social Cognitive Theory and Health Behavior

The social psychological hypothesis may be relevant in influencing behavioral change. According to Glanz, Rimer, and Lewis (2012), human conduct could be reflected in a model in which there is collaboration between behavior and individual variables, including comprehension and natural influences. "Among the different variables are the individual's capacities to symbolize, to foresee the results of conduct, to learn by watching others, to have trust in performing manner, to self-direct a conduct, and to think about and break down experience" (Glanz et al., 2014, p. 165). Wellbeing instructors have utilized the social psychological hypothesis to execute methods and procedures to expand and encourage of positive conduct change (Glanz et al., 2014). The hypothesis includes a few ideas, namely, "environment, circumstance, behavioral capacity, desires, anticipations, restraint, observational learning, fortifications, self-viability, enthusiastic adapting reactions, and corresponding determinism" (Glanz et al., 2014).

The environment comprises elements that are outside the individual (Glanz et al., 2014). These elements include family, companions, associates, and access to food. An individual's capacity to perform given actions could be identified as behavioral ability. Self-adequacy is the certainty the individual has in performing a behavior and in overcoming the obstacles to performing the work. As indicated by Glanz et al. (2014), a person utilizes passionate adapting reactions as techniques to overcome stress. Complementary determinism includes correspondence between the individual and the context in which the behavior is performed.

I selected social cognitive theory for this study because it was relevant to health education. According to Glanz et al. (2014), the theory summarizes different cognitive, emotional, and behavioral understandings of behavior change. The concepts and processes identified by this method indicate significant opportunities for new behavioral research and practice in health education (Glanz et al., 2014). This study addressed racial diversity as a socio-cultural factor, and risk factors that required developing more accurate health promotion for interventions.

There was a need for systematic behavioral studies that adequately reified theoretical frameworks. Such studies are also required to assist in response planning effective program. One theory that had been useful in health education for nearly three decades is Bandura's (1986) social cognitive theory. Social cognitive theory offers a practical framework. Within Bandura's (1986) theory, the primary constructs are self-efficacy (i.e., behavior-specific confidence in one's ability to influence one's habits, expectations about expected costs, and benefits for different health practices) and self-control (i.e., goals that persons set for themselves). Self-efficacy is a fundamental requirement for behavior change. Expectations for such change pertain to physical outcomes, social results of approval and disapproval, and positive and negative self-evaluative reactions. Expectations are a function of actual results, anticipatory effects of behavior, or the value that a person places on a given outcome. The demonstration of self-control involves setting goals that are proximal and distal and that adjust the course for change.

The purpose of this study was to examine the extent to which selected social cognitive theory constructs (expectations, self-efficacy, and self-control) could predict the four behaviors in upper elementary children of Hispanic American and Latino community in Georgia as follows:

Moderately intense physical activity of 30 minutes daily. Limiting television viewing to two hours per day. Increasing water consumption to eight glasses per day. Increasing fruit and vegetable intake to five or more servings per day. The remainder of this section described several studies on the application of social cognitive theory.

Lubans et al. (2011) social cognitive theory inspects and assesses a social psychological model of physical movement in pre-adult females. Is reasoned that the design gives flexibility on which scales are incorporated and includes a scope of projects and intercessions for pre-adult females. Plotnikoff, Costigan, Karunamumi, and Lubans (2013) analyzed the utilization of the social behavior for physical activities in children. Is concluded that the dominant part of the physical activity was not explained and recommended more future studies. Anderson, Winett, and Wojcik (2012) analyzed how the social cognitive theory represents of food purchases and utilization among grown-ups. Is asserted that social psychological theory proposes that self-viability is the best determinant of eating nutritious food in connection with directing nourishment allowances and purchases.

Neumark-Sztainer, Eisenberg, Fulkerson, Story, and Larson (2013) conducted a five-year longitudinal study of the relationship between family eating patterns and eating disorders in teenagers. Youth from 31 Minnesota schools finished the EAT Review. The researchers conjectured that young females had less consistent eating pattern than young males with regular family suppers. The report showed that standard family eating among juvenile females was connected which is a useful practice with less time to perform useful practices for controlling their weight; in any case, family suppers for young men did not foresee lower levels of eating disorders

(Neumark-Sztainer et al., 2013). This study proposed that parents investigate approaches to expanding the practice of having dinners as a family. The study was important because it inspected whether race/ethnicity influences diet and physical movement among undergraduates in the Virgin Islands. The study included data about the area of where suppers were taken (grounds, family home) and provision for family interaction concerning adhering to a proper diet and taking an interest in physical activity. Neumark-Sztainer et al. (2013) recommended that being active with the family can affect eating, which might affect undergraduates' eating practices. On the chance that children should participate in the preparation of suppers in their families, such experience can influence their eating practices. The study recommended that households in the U.S. try to arrange their meals so that they could eat together (Neumark-Sztainer et al., 2013).

Neumark-Sztainer et al. (2013) reviewed the utilization of the EAT Venture and the social, intellectual theory. Their motivation was to give the analytical results from years of examination of family dinner as a component of Task EAT. Center gatherings comprised 141 centers with secondary school young people (Neumark-Sztainer et al., 2013). Participants at the research centers responded to the survey questions on the centrality of family suppers affecting wellbeing practices. The discoveries demonstrated that numerous young people still trusted that family suppers are important, yet there were differences in the relationship between the examples of family dinners in homes (Neumark-Sztainer et al., 2013). Is recommended further research on family supper meals and wellbeing results. They suggested that family dinners contain great nourishment in the United States. This study was of an alternative culture and included looking at the relationship between the variables, if any.

Arcan et al. (2012) analyzed people's reports of access to food in homes and the relationship between parents and children the same food. Is cited an ethnic examination of young people longitudinally from 1999-2004. Affiliations were analyzed independently for male and female secondary school adolescents and post-secondary adults (Arcan et al., 2012). The report documented that 28% of males and 38% of females had less than three servings of food a day. The post-secondary adults had an even lower intake of vegetables. The input of parents was like that of their children (Arcan et al., 2012). This study concluded that children acquired good behavior from watching their parents.

Bauer, Nelson, Boutelle, and Neumark-Sztainer (2012) conducted a longitudinal study on how parents' behavior can affect their children's capacity to be physically active. The parents were concerns about their children's nonphysical activity and stationary practices for five years later. Teenagers and adolescents were studied and asked to respond to whether their parents urged them to stay physically active and were worried about their staying fit. Their physical movement and stationary ways of life were surveyed utilizing linear relapse models. The outcomes showed the parental support anticipated teenagers' propensities; both parents differently affected males and females. The researchers reasoned that parents ought to continue urging their children to perform physical movement, yet more research is expected to show more ways for parents to support their children. This study showed parents strengthen and empower their children to behave positively.

Plotnikoff, Costigan, Karunamuni, and Lubans (2013) assessed and inspected the social psychological hypothesis to clarify reasons for physical action and conduct among young people. This posits that social behavior determinants change behavior (Plotnikoff et al., 2013). Is expressed

the view that this hypothesis was vital in controlling mediation and fostering positive behavior change. They inferred that further studies that utilized satisfactory strategies were required because the proof of the social psychological hypothesis for depicting a youthful populace's physical action was limited.

Television Watching

The relationship between time spent on television and obesity has been reported in several research studies (Sharma & Wilkerson, 2012). Those studies indicated four potential problems that connect excessive television viewing to obesity. The problems with extensive television watching are:

1. Excessive TV viewing reduces vitality by dislodging physical action (CDC, 2016).
2. It encourages consumption of high calorie high-fat foods (Jordan & Robinson, 2011; Robinson, 2014).
3. It increases lack of adequate nutrition. (4) It decreases metabolic rate. Besides excessive television viewing, TV advertising induces the purchase of non-nutritious, "junk" foods by parents who compulsively do so because of pressure from their children (Taras, Sallis, Patterson, Nader, & Nelson, 2011).

Bryant, Lucove, Evenson, and Marshall (2012) found that nations with the most elevated promotion of non-nutritious food showed the greatest amount of youth obesity, the U.S being among the top-ranked in the world. As indicated by Schlosser (2012), companies worldwide have created entire divisions to target children and to influence parental purchases, especially for food. Such phenomena as "brand dependability" and "pestering strategies" can appear as early as two

years of age and is highly effective. In a study by Taras et al. (2012), children's television viewing had a direct effect on parental purchases and consequent increases in BMI in youngsters. Research suggested that high sugar, high-fat foods were the most asked for by children and most purchased by parents. The research illustrated the connection between caloric consumption, the number of television viewing hours, the amount of nourishments asked for, the number of obtained nourishments, and the frequency of eating while viewing TV. The result of this research was to connect these factors with a BMI increase in children. Swiss researchers Stettler, Endorser, and Suter (2014), on the other hand, discovered that time spent viewing television was a risk for obesity in children regardless of the programming. A shortcoming of the Swiss research was that TV viewing time excluded weekend viewing; notwithstanding, the study demonstrated the effect of television viewing on childhood obesity.

A study of 4- to 11-year-old children by Sharma and Wilkerson (2014) found that significant inversely-related predictors for childhood obesity were (a) a relatively high number of physical education hours and (b) regular TV viewing. In the case of watching TV, the number of times that classes taught children about healthy nutrition ($p < 0.03$) and self-control for watching less than two hours of TV ($p < 0.04$) were significant predictors (Sharma & Wilkerson, 2014). They did not find the other two constructs of expectations and self-efficacy to be significant predictors. The mean scores of these latter two constructs were in the middle of the range. They did not find any intervention for those two constructs implemented in the target population. The absence of such interventions and the relatively lower values were possible reasons that these constructs were not able to add predictive potential. The mean number of hours of TV watching

was found to be 2.51, with 65.9% viewing less than two hours of TV (the desired value). The percentage of students who watched three or more hours of TV per day was 34.1%, as compared to CDC's national data of 38.2% (CDC, 2012). While the content of nutrition classes is not known, it is likely that these levels conveyed a message about excessive TV viewing.

To determine whether viewing television for a long duration has a benefit than duration of physical activity. Bellissimo, Pencharz, Thomas, and Anderson (2011) regulated glucose preload to 9 to 14-year-old, ordinary weight Canadian males. In the television study, is were unable to report a significant reduction in less hunger after the preload of around 228 kcal in one 22-minute lunch period. Sanctuary, Giacomelli, Kent, Roemmich, and Epstein (2011) supported this finding. In their exploratory study, male and female children of same age ate for longer lengths of time, had more desire to eat, ignored any feelings of being full, and frequently ate while viewing television. These studies, however, were based upon small sample sizes making a generalization to obese children problematic. Francis and Birch (2012) under research facility conditions discovered no difference in food consumption in preschool youngsters.

From 2003 to 2006, 17.1% of children between the ages of 2 and 19 were labeled obese (CDC, 2011; Dietz, Remains, Weschler, Malepati, & Sherry, 2012). This figure is triple that of two decades prior. The frequency of youngsters' being overweight has dramatically increased after the 1980s, and the obesity frequency of teenagers has significantly multiplied (Weschler, McKenna, Lee, & Dietz, 2014). The aggregate expense of obesity for adults and children, including medical expenses and the estimation of wages lost by adults not able to work due to complications resulting from obesity was about $117 billion in 2014 (Weschler et al., 2014).

Youthful obesity is particularly destructive because of its costs and physical results (Olshansky et al., 2015). The CDC (2015b) reported that adolescent obesity leads to secondary diseases like hypertension, osteoarthritis, dyslipidemia, type 2 diabetes, coronary illness, stroke, bladder infection, sleep apnea, respiratory issues, and individual tumors. Olshansky et al. (2015) concluded that obesity is an "undermining storm" that may bring about decreased life expectancy, especially during the first half of the twenty-first century, with the present generation of children living shorter and less productive lives than their parents (Olshansky et al., 2015).

Moore et al. (2013) directed a longitudinal study utilizing information from the Framingham Children Study (FCS) to inspect the relationship between physical action and change in obesity over a period of eight years. The researchers used activity and anthropometry measurement for 103 youths to examine the impact of the physical work on changes in the muscle to fat ratio ratios from preschool elementary (Moore et al., 2013). Results revealed that children in the most regular activity of the typical day-by-day movement from ages 4 to 11 years had lower BMI, triceps, and an aggregate of five skinfold all through adolescence (Moore et al., 2013). By age 11, the total of five skinfold was 95.1, 94.5, and 74.1 for small, center, and high physical activity (Moore et al., 2013). The effectiveness was apparent for both males and females (Moore et al., 2013). The mean BMI + SE for the low, direct, and high action gatherings were 20.3 + 0.6, 19.8 + 0.5, and 18.6+ 0.6, respectively Moore et al. (2013) demonstrated that larger amounts of physical action in adolescence leads to the development of less muscle to fat ratios.

Trost, Sirard, Dowda, Pfeiffer, and Pate (2013) performed a cross-sectional study that inspected physical movement in preschool children identified as overweight. They used a sample

of 245 children from three to five years of age and their parents (242 mothers and 173 fathers) from nine preschool destinations. They surveyed physical movement at preschool on various days, utilizing two independent measures. Parents completed a questionnaire that surveyed socio-demographic data, parental height and weight, demonstration of physical movement, support for physical action, dynamic toys, wearing running clothes at home, children's TV viewing, and playing in the recreation park. Their use of two-way ANCOVA at the .05 level of significance revealed that young males depicted as overweight were inherently less dynamic than their companions who were not overweight and that no critical difference was apparent in young females. Despite the established connection between adolescents' weight status and parents' obesity, there was no difference in parental influence on physical activity. Trost et al. (2013) presumed that children were critically at risk for obesity under the condition of low levels of physical movement.

Physical Activity

Daatar and Sturm (2014) investigated the relationship between BMI and physical training (PE) instructional time in primary schools. They inspected 9,751 kindergartners and checked on the effect on BMI in second grade utilizing the children as the control. They established that one extra hour in physical training decreases BMI among young obese females or in danger of becoming overweight in kindergarten (coefficient = - 0.31, $P < .001$) but had no significant impact among males who were overweight or at risk of becoming overweight young males (coefficient = - 0.07, $P = .25$) or among young males (coefficient = 0.04, $P = 0.31$) or young females (coefficient

= 0.01, P = .80) with an ordinary BMI. Dataar and Sturm (2014) reasoned that physical training projects might be successful interventions for decreasing obesity in childhood.

Kimm et al. (2015) reported that physical movement plays a crucial role in counteracting obesity and diabetes. Is reported on the findings of a 10-year longitudinal study of 2,287 young females living in the United States. The study evaluated the participants at years 1 (the benchmark), 3, 5, Age 7-10 Females' motions were classified as dynamic, reasonably active, or dormant. The researchers used longitudinal relapse models to look at the relationship between changes in movement, and changes in BMI were classified as skinfold thicknesses. Kimm et al. (2015) reported that a decrease in an action of 10 metabolic proportionate [MET] times per week was associated with an expanded BMI of 0.14 kg/m2 (SE 0.03) and with skinfold thickness of 0.62 mm (0.17) for young African American females. The same report indicated a 0.09 kg/m2 (0.02) and 0.63mm (0.13) for young Caucasian females. At ages 18 or 19 years, BMI for females falls in the middle of dynamic for latent young females were 2.98 kg/m2 (P< 0.0001) for African American young females. Kimm et al. (2015) inferred that adjustments in the movement level in intensive exercise in American young females influenced changes in BMI and obesity. Extended physical activity; drinking more water instead of sweetened beverages, eating more servings of fruits and vegetables, and eating smaller portions were important techniques for decreasing weight.

The CDC (2016) indicated that of the total number of students, 14.3% did not engage in a physical activity for a minimum of 60 minutes. Here, the term physical activity was defined as any movement that would increase heart rate and cause breathing at an elevated rate of respiration on a minimum of one day of the seven days that preceded the survey. Physical activities meant to

increase their heart rate and make them breathe hard some of the time on no less than six of the seven days before the survey. The incidence of non-performance of physical activity was greater for female (17.5%) than male students (11.1%). However, incidence was greater for Caucasian, African American, and Hispanic American female students (14.3%, 25.2%, and 19.2% respectively) than for Caucasian, African American, and Hispanic American male students (8.8%, 16.2%, and 11.9 respectively). There was also a greater rate of non-performance for 9th, 10th, 11th, and 12th grade females (14.7%, 15.8%, 18.2%, and 21.4% respectively than was recorded for 9th, 10th, 11th, and 12th grade males (9.5%, 10.4%, 12.4%, and 12.4% respectively).

The incidence of non-performance of physical activity (pursuant to the survey's operating definition) was greater for African American and Hispanic American students (20.4% and 15.6% respectively) than for Caucasian students (11.6%). However, the frequency of non-involvement in physical activity was greater for African American students of any sex (20.4%) than the 15.6% for Hispanic American students of any sex. Again, the incidence was greater for African American and Hispanic American female students (25.2% and 19.2% respective) than was the incidence for Caucasian females (14.3%). Also, the incidence was greater for African American females (25.2%) than for Hispanic American females (19.2%), as it was for African American males (16.2%) versus Caucasian males (8.8%).

The prevalence of the previously defined non-participation in physical activity not having participated on in at least 60 minutes of physical activity at least one day per week was more pronounced for 11th and 12th graders (15.5% and 16.9% respectively than it was for 9th graders (12.0%). The survey also reported that non-participation in physical activity was greater for 12th

graders than for 10th graders (16.9% versus 13.1%), for 11th and 12th grade females (18.2% and 21.4% respectively) over females in 9th grade (14.7%), for females in 12th grade over females in 10th grade (21.4% versus 15.8%), and for males in 11th grade over males in 9th grade males (12.4% versus 9.5%). Youth Risk Behavior Surveillance-the United States (YRBS) (2015) reported that between 2011 and 2015, it was not possible to identify significant linear trends regarding the pervasiveness of the physical activity variable. The prevalence of the variable did not change significantly from 2013 (15.2%) to 2015 (14.3%), according to the CDC (2016). The incidence of non-participation in physical activity across 37 states fell into a range from 10.7% to 22.9% (median: 15.9%), and in 18 large urban school districts, the pervasiveness ranged between 13.2% and 30.1% (median: 21.6%).

Healthy People (2012) suggested that interest in physical activity is one segment that maintains a stable society. However, contemporary living and working conditions have diminished interest in physical development (McManus & Mellecker, 2014). McManus and Mellecker (2014) asserted that stationary lifestyles have produced overweight individuals and extended the risks associated with such a physical condition. More undergraduates have unbalanced lifestyles and there has been a concomitant increase in associated risks. There has been a decrease in physical activity among undergraduates' ages 18 to 24 years (Jeffery, 2013; McManus & Mellecker, 2014). The American School Wellbeing Alliance (2011) reported that only 19% of students exhibited enthusiasm for current physical activity (five days or more), and only 28% participated in physical activity for three days or more.

Dietary

Use of vegetables and organic products varied among ethnic and racial gatherings, as indicated by the CDC (2015). The self-reporting survey report utilized the Behavioral Risk Factors Surveillance System (BRFSS) for 2015. The effects of eating vegetables five or more times each day were more pronounced in males than in females (CDC, 2016). Those who reported eating five or more vegetables per day were Caucasians (12.6%), African American (11.2%), Hispanic Americans (1.7%), Native American (17.5%), Asian Pacific Islander (10.5%), and others (16.5%) (CDC, 2015).

The researcher requested that participants complete a computerized telephone study using different measures but testing the same arrangement parameters and sample. Per the CDC (2015) report, the outcomes showed a need to achieve an eating regimen high in vegetables and fruits. The survey recommended a complement of physical action by all participants, particularly racial and ethnic minorities (CDC, 2015). This information demonstrated how different population segments consume vegetables. This information should have an influence on what people, including children, eat at home, yet the information from CDC indicated ethnic contrasts that might influence undergraduates' eating routines.

The Youth Physical Activity and Nutrition Survey was designed and distributed to middle schools in Florida by Howie and Pate (2014). The study's purpose was to collect data on physical activity, nutrition knowledge, and health practices among middle school students. The sample was 4,452 students with data collected in spring 2013. The detailed survey tested participants by age

range from 12 to 14 years and the sample was a representative on age, grade level, race, and ethnicity. The results indicated that only 22.8% consumed five or more fruits and vegetables daily. There were substantial differences in grade level and ethnicity. However, there were no significant differences in survey reports based on sex or gender. African Americans reported 29.9% consumption, and Caucasians consumed 20%. The results for eating breakfast were significant for the 5th grade level, gender, and ethnicity. For physical activity, there was a significant difference in ethnicity with African American youth at 11% who did not engage in any physical activity and Caucasian youth at 5% (Howie & Pate, 2014). Is concluded that these findings only indicated that the obesity epidemic would continue, and that female youth and Hispanic American youth should be the focus of physical activity intervention.

Factors such as race, age, wage, and gender have been found to affect sustenance choices (Kuchler & Lin, 2012). Westenhefer (2015), in a study done on the Eating Regimen and Wellbeing Learning Audit, reported that age and gender do influence sustenance choices. Aruguete, DeBord, Yates, and Edman (2015) coordinated a study and investigated ethnic and gender by introducing variances in eating standard among undergraduates using a sample of 424 students from a Midwestern college. The undergraduates self-reported their ethnicity as African American, Caucasian, multiethnic, and other. The undergraduates carefully, completed a study during class time for two semesters. Demographic information was assembled and assessed for gender introduction, age, weight, stature, ethnicity, diet, body mass, and work out.

The BMI outcomes showed that there was a noticeable effect of ethnicity in the survey report benchmarks, especially since non-Caucasians were more energetic than the Caucasians.

However, there was no difference in age for gender introduction. The study included age as a covariate to control the effect of age on ethnicity. Bundle differences were analyzed using the 2-way sex ethnicity ANCOVA. The study surmised that African Americans had a higher BMI than Caucasians and that BMI fundamentally influenced ethnicity. Ethnicity affected body frustration, self-loathing, and calorie counting. The Aruguete et al. (2015) study suggested that race may affect students in the United States. This study broke down how race affected eating standards and physical activity choices among undergraduates in the Midwestern College.

Franko et al. (2012) studied an online sustenance program using the telephone to reach participants. Six hundred and six undergraduates from six universities, ages 18 to 24 years, took part in the study. The researchers randomized the participants and assigned them to trial and control groups. Undergraduates accepted the consent structure and data collection took place in a PC lab. Fifty-eight percent of the sample was non-Hispanic American Caucasian, 14% non-Hispanic American 15% Hispanic American, 6% Asian, and 7% of the sample was African American (Franko et al., 2012). The undergraduates showed potential for personal wellbeing after becoming familiar with a sustenance program. Where undergraduates were influenced at an early age to adhere to the healthy practices of their families, they may transmit this behavior to others for their entire lives.

Eating More Fruits

The CDC (2016) showed that of all students, 20.0% consumed fruit or consumed pure fruit juice at least three times daily during the week prior to the survey (Youth Risk Behavior Surveillance-the United States (YRBSUS), 2015). The survey noted that the routine of consuming

fruits or 100% fruit juice at least three times daily was higher for males than females (22.1% versus 18.0%). The practice was also higher among African American (29.1%) and Hispanic American males (26.6%) than for African American and Hispanic American females (both 20.5%); the practice was also more in evidence for Hispanic American males in 9th than for Hispanic American females in 9th grade (24.3% versus 16.9%). The survey report also indicated higher prevalence of 100% fruit juice consumption after meals for African American and Hispanic American students (25.1% and 23.6% respectively) than the 17.0% for Caucasian students. Also, it was more prevalent for African American females in 10th grade and 10th grade Hispanic American females (both at 20.5%) than for 10th grade Caucasian females at 16.0%. The survey also reported a higher prevalence for 10th grade African American males and Hispanic American males (29.1% and 26.6% respectively) than for the survey's reported 18% for 10th grade Caucasian males (YRBSUS 2015).

Between 1999 and 2015, there is evidence of a significant decrease in the pervasiveness of fruit or fruit juice consumption variable (24.9% to 20.0%). In all, there was no identified significant quadratic trend in the survey report. The prevalence of eating and fruit or drinking 100% fruit juices three or more times per day decreased significantly from 2013 (21.9%) to 2015 (20.0%). Across 36 states, the prevalence of eating fruit or drinking 100% fruit juices three or more times per day ranged from 13.1% to 22.5% (median: 17.0%). Across 18 large urban school districts, the prevalence increased from 17.3% to 24.6% (median: 21.4%) (YRBSUS 2015).

Serving More Vegetables per Day

The CDC (2016) measured vegetable consumption in terms of a variable of having consumed vegetables at least three times daily during the seven days prior to the collection of study date. For this variable, the CDC reported that for all states 14.8% of students met standard within the Georgia Public Schools and School Districts. Among males, the incidence of meeting the threshold was higher for males (16.6%) than for females (12.9%). The same relationship held true (a) for Hispanic American male students (18.8%) compared with Hispanic American female students (12.7%) and (b) for 9th and 10th grade males (17.1% and 15.9% respectively) compared with 9th and 10th grade female students (11.6% and 11.2% respectively). Additionally, the incidence of the vegetable consumption variable was reported as greater (a) for Hispanic Americans (15.8%) than for Caucasians (13.5%) and greater for Hispanic American males (18.8%) than for Caucasian males (13.9%), (b) for 12th grade students (16.0%) than for 10th grade (13.5%) students, and (c) greater for female students in 11th grade (13.9%) than for female students in 10th grade (11.2%). The CDC (2016) and YRBSUS (2015) report no significant change in the variable from 2013 (15.7%) to 2015 (14.8%). For 32 states, the variable ranged between 9.1% and 18.1% (median: 12.6%), and for 16 large urban school districts, it ranged between 9.5% and 16.8% (median: 12.6%) (CDC, 2016).

Water Consumption

For all states, failure to meet the threshold conditions of the variable was 3.5%. The reported results showed a greater incidence for African American (8.7%) than for Caucasian and Hispanic American (2.7% and 3.3% respectively). The survey showed, however, that the incidence was greater for African American females (9.0%) than for Caucasian and Hispanic American

females (2.5% and 2.8% respective), and greater for African American males (7.8%) than for Caucasian and Hispanic American males (2.9% and 3.8% respectively). The prevalence for not meeting the drunk water threshold was greater among females in 10th grade (4.4%) than it was for females in 11th grade (2.0%) (YRBSUS 2015). The survey variable for abstention from water was first used for the 2015 national Youth Risk Behavior Surveillance System. Hence, long- and short-term trend data are not available. I excluded this survey question from the standard questionnaire used in the state and large urban school district surveys in 2015. Thus, the range and median prevalence estimates across states and large urban school districts for the prevalence of not having drunk water are not available (CDC, 2016; YRBSUS, 2015).

For the variable defined as drinking a minimum of two glasses of water per day during the seven days prior to national survey data collection was 64.3%. This variable was greater for 10th grade males than for 10th grade females (67.5% versus 60.6%). It was also (a) greater for Caucasians and Hispanic Americans (66.3% and 63.7% respectively) than for African Americans (50.8%), (b) greater for Caucasian and Hispanic American females (65.7% and 62.7% than for African American females (47.4%), (c) greater for Caucasian and Hispanic American males (67.2% and 64.7% respectively) than for African American males (54.1%), (d) greater for 11th and 12th graders (65.8% and 66.6% respectively) than for 9th graders (61.3%), (e) greater for 12th graders (66.6%) than for 10th graders (63.9%), (f) greater for female 11th graders (66.1%) than for female 9th and 10th graders (61.3% and 60.6% respectively), and (g) greater for male 10th and 12th graders (67.5% and 67.6% respectively) than for male 9th graders (61.7%).

Nationally, regarding consumption of three or more glasses of water daily during the seven days prior to the survey, the incidence was 49.5%. For males, the incidence at 51.0% was greater than for females at 48.1%. So also, the value was greater for Hispanic American males at 52.5% than for Hispanic American females at 47.9% (YRBSUS, 2015). The value of the variable was (a) greater for Caucasian and Hispanic American students at 49.9% and 50.3% than for African American students at 39.1%, (b) greater for Caucasian and Hispanic American females at 49.7% and 47.9% respectively than for African American females at 35.7%, (c) greater for Hispanic American males at 52.5% than for African American males at 42.2%, (d) greater for female 11th grader at 51.4% than for female 10th graders at 46.1% (CDC, 2016).

Summary

The increasing incidence of childhood obesity in the Hispanic American and Latino children from community churches in three different counties in the state of Georgia is the focus of this study. Particularly, concerning the healthcare and social challenges, includes costs elements, not only in Georgia but across the United States. The study will examine the extent to which the selected social cognitive theory behaviors could help decrease incidences of child obesity in the Hispanic American community, particularly in these three Counties in, Georgia. Focusing on the following: (1) Daily moderately intense physical activity of 30 minutes, (2) Decreased television viewing to two hours per day. (3) Increasing water consumption to eight glasses per day. (4) Reducing food portion sizes. (5) Increasing fruit and vegetable intake to five or more servings per day

I employed a matrix method to review the relevant literature. By using a broad range of keywords, diet, television viewing, ethnicity, race, subjective social elements, weight, obesity, physical movement, youth, and subjective social hypothesis. I searched for articles from databases such as Medline, Sage, CINAHL, and ProQuest. I also focused the study on the social cognitive theory and health behavior.

The literature review has principally focused on the association between race, diet, and physical activity among Hispanic American children in these three counties in Georgia. The salient predictors explored in the analysis were epidemiology of obesity risk factors, television watching, physical activity, eating more fruits, portion size control, serving of vegetables per day; drinking water per day.

Chapter 3: Research Method

The major goal of this quantitative cross-sectional study was to ascertain the extent to which the SCC constructs of expectations, self-efficacy in overcoming barriers, and self-control predict duration for television viewing, period of physical activity, consumption of fruits and vegetables, consumption of water, and portion size for upper elementary Hispanic American children. I expected that this study may provide further opportunities for investigators, physical educators, and health advocates to explore avenues of initiating, encouraging, and enhancing health-promoting strategies to prevent or curb obesity in children. According to Davis et al. (2010), people in lower-income brackets suffered more health problems linked to obesity than their counterparts in higher-income brackets. Ogden et al. (2012) concluded that there was a correlation between childhood obesity and etiological issues consisting of improper nutrition, poor lifestyle choices, lack of exercise or an intentional sedentary lifestyle, and a lack of amenities such as places to walk. The literature drew a connection between inadequate dietary intake, lack of exercise and recreation facilities, and increased childhood obesity among the Hispanic American community in the state of Georgia (see Ogden et al., 2012; WHO, 2014). Utilizing the Behavioral Risk Factor Surveillance System (BRFSS), the CDC (2016), the State of Georgia ranked second in childhood obesity rates. About 71% of adults over 18 years old in DeKalb County, Georgia consume less than five servings of fruits and vegetables daily. Established in 1984, the Behavioral Risk Factor Surveillance System (BRFSS) is the nation's premier system of health-related telephone surveys that collect state data about U.S. residents regarding their health-related risk behaviors, chronic health conditions, and use of preventive services.

The CDC BRFSS project findings are cause for public health concerns due to the likelihood that the study subject adults would be negative role models for healthy eating lifestyles for adolescents and children in their respective homes by not providing the requisite fruits and vegetables recommended for their young ones in the three subject county communities.

This chapter describes the research design and statistical procedures employed in the research questions. It also describes sample size estimation, sampling method, dependent/independent variables, and data types and format. It addresses ethical considerations related to research survey instrument administration, the validity of survey instruments, issues related to non-response, and missing data.

Validity of the Instrument

The survey instrument used for data collection in this study Promoting Healthy Lifestyle Survey, was developed and validated by Sharma, Wagner, and Wilkerson (2014). The instrument has proven to be robust and reliable in different settings. This survey being used in this study has been validated in several other studies involving preteen and teen children.

Research Design Rationale

The study was conducted in three different community churches located in three counties in Georgia (DeKalb, Clayton, and Gwinnett counties). The target population consisted of Hispanic American/Latino children ages 11-15. The researcher chose to use community-based church and faith organizations for their study sample as the study was not government sponsored. Again, as the study is not government sponsored, the county and city administrations will be reluctant to

cooperate with the researcher in the study, because of its likely negative impact on the school calendar, time, and curriculum.

In view of the difficulty of using a simple random sampling approach due to cost and time constraints, I used a convenience sample approach to collect data for this research. I collected and distributed the questionnaire through an assigned church youth leader assistant at each church. This process was repeated until all of the required samples were obtained.

Data Collection

The researcher adopted the following processes in collecting data from the research population and sites: A study sample of 235 participants with complete respondents of 79 participants from each county surveyed. The study sample population were Hispanic American/Latino church children in DeKalb, Clayton, and Gwinnett counties in Georgia. The ages of the sample population were 11 to 15 years old the researcher liaised with Hispanic American resident church pastors as contacts. The pastor then assigned researcher a youth leader of Hispanic American origin to assist as the facilitator throughout the process. A letter of cooperation was elicited from the management of the local churches and resident pastors the facilitators assisted in the distribution and administration of the assent/informed consent forms to parents under direct supervision of the researcher. Consent was conducted in the church auditorium and classes in sub-cells. Questionnaires were distributed, completed, and retrieved from the church auditorium/classes under the supervision of the researcher. No foreseeable risk was envisaged in the process of data collection; however, presumptive minimal risk was addressed by the completion of informed consent/assent forms. Letters of cooperation from the

resident pastors were attached to Institutional Review Board (IRB) subsequent submission for approval before conducting the survey. A Hispanic American version of the assent/informed consent form was designed for ease of communication with the participants' parents.

Instrumentation and Operationalization of Constructs

The theoretical framework of this research was based on SCT constructs as postulated by Bandura. The primary constructs of the SCT are self-efficacy or behavior-specific confidence in one's ability to influence one's habit, expectations about expected costs and benefits for different health practices, and self-control or personal goals (Bandura, 1986; Glanz et al., 2014). These constructs were operationalized using the Promoting Healthy Lifestyle Survey. Formal permission was obtained to use this survey (see Appendix A).

Description of Dependent and Independent Variables

Dependent Variable

The dependent variables are the five behaviors of interest defined in Table 1.

Table 1

Description of Five Behaviors of Interest Used as Dependent Variables

s/n	Variable/Description	Data Type	Format
1	Time spent on physical activity or exercise in past 24 hours	Numerical	Continuous variable Less than 30 min, 30 min or more
2	Time spent watching TV in past 24 hours	Numerical	Continuous variable 2 hrs or less, more than 2 hrs
3	Glasses of water: Number of glasses of water student drank in the past 24 hours	Numerical	Continuous/categorical variable Less than 8 glasses, 8 glasses or more
4	Servings of fruits and Vegetables: Number of servings of fruit and vegetable student ate in the past 24 hours	Numerical	Continuous variable Less than 5 servings, 5 servings or more
5	Meal Portion size: Students typical meal portion size	Categorical	Ordinal small =1, medium=2, large=3, very large=4

Variable format may be stated as “continuous/categorical.” Where variable format is stated as “continuous/categorical,” it implies that data for such variables will be collected as continuous data but used in the analysis as both continuous data (just the way they were collected) and categorical data (classified as indicated after collection).

Independent Variables (key variables of interest)

The research variables of interest are the four SCT constructs. They were included in the analysis as independent variables. See Table 2.

Table 2

Description of the Four Social Cognitive Constructs Used as Independent Variables

s/n	Variable/ Description		Format
1	Expectations: defined as the extent of value that a person places on an outcome.	Numerical	Data collected with Likert Scale (0 to 4) but used in analysis as metric variable with range of 0-64
2	Self-efficacy: refers to behavior-specific confidence in one's ability to influence one's habits.	Numerical	Data collected with Likert Scale (0 to 4) but used in analysis as numerical variable with range of 0-4
3	Self-efficacy in overcoming barriers: refers to behavior-specific confidence in one's ability to influence one's habits in the presence of an inhibiting factor.	Numerical	Data collected with Likert Scale (0 to 4) but used in analysis as numerical variable with range of 0-8
4	Self-control: the ability to set personal goals and self-reward oneself on accomplishing those goals.	Numerical	Data collected with Likert Scale (0 to 4) but used in analysis as numerical variable with range of 0-8

How the Range of the Research Variables Were Computed

Expectation. Expectation was a function of (a) outcome expectations or anticipatory results of a behavior (captured in survey items 12-31) and (b) outcome expectancies or the value that a person places on a given outcome (captured in survey items 32-41). For each student, the value for the expectation variable for each of the five behaviors was computed as follows: *Expectation for 30 minutes or more of physical activity:* (item 12 X item 32) + (item 13 X item 33) + (item 14 X item 34) + (item 15 X item 35)*Expectation for two hours or less of watching television:* (item 16 X item 36) + (item 17 X item 37) + (item 18 X item 34) + (item 19 X item 38)

Expectation for drinking water instead of sweetened beverages.: (item 20 X item 38) + (item 21 X item 39) + (item 22 X item 40) + (item 23 X item 41) *Expectation for eating five or more servings of fruits and vegetables:* (item 24 X item 40) + (item 25 X item 39) + (item 26 X item 32) + (item 27 X item 41).

Expectation for eating smaller portion size: (item 28 X item 41) + (item 29 X item 40) + (item 30 X item 39) + (item 31 X item 38)

Computing the variables in this way would mean that the value for expectation for each student in each of the five behaviors would range from 0 – 64. For example, if a randomly selected student responds "always = 4" for items 12, 13, 14, 15 representing outcome expectations and responds "extremely important =4" for items 32, 33, 34, 35 representing outcome expectancies. Then for such a student, the expectation scores 30 minutes or more of physical activity equals

expectation times expectancy times four questions, 4 x 4 x 4 = 64. The scores for the remaining four behaviors for this student would be computed in the same way.

Self-efficacy. Self-efficacy refers to behavior-specific confidence in one's ability to influence one's habits. For each student, the value for the self-efficacy variable for each of the five behaviors was computed as follows:

- *Self-efficacy for 30 minutes or more of physical activity.* Item 42
- *Self-efficacy for 2 hrs or less of watching television:* Item 47
- *Self-efficacy for drinking water instead of sweetened beverages:* Item 52
- *Self-efficacy for eating five or more servings of fruits and vegetables:* Item 57
- *Self-efficacy for eating smaller portion size:* Item 64

Computing the variable this way meant that the value for self-efficacy for each student in each of the five behaviors ranged from 0 – 4. For example, if a randomly selected student responded "very sure = 3" for item 42 and another student responded "Slightly Sure = 2" also for items 42. Then such a student's score for self- efficacy for 30 minutes or more of physical activity = 3 and 2 respectively. The scores for the remaining four behaviors for these students will be computed the same way.

Self-efficacy in overcoming barriers. This variable is the self-reported ability to overcome obstacles to carrying out a given behavior. For each student, value for the self-efficacy in overcoming barriers variable for each of the five behaviors were computed as follows:

- *Self-efficacy in overcoming barriers for 30 min or more of physical activity: i*tem 43 + item 44

- *Self-efficacy in overcoming barriers for 2 hrs or less of watching television:* item 48 + item 49
- *Self-efficacy in overcoming barriers for drinking water instead of sweetened beverages:* item 53 + item 54
- *Self-efficacy in overcoming barriers for eating 5 or more servings of fruits and vegetables*: item 58 + item 59
- *Self-efficacy in overcoming barriers for eating smaller portion size*: item 63 + item 64

Computing the variable in this way meant that the value for self-efficacy in overcoming barriers for each student in each of the five behaviors will range from 0 to 8. For example, if a randomly selected student responded "Completely Sure = 4" for item 48 and responded "Completely Sure = 4" for item 49, then for such a student the score for self-efficacy in overcoming barriers for watching television for two hours or less = 4 + 4=8. The scores for the remaining four behaviors for this student was computed the same way.

Self-control. Self-control was defined by Bandura (2004) as the ability to set personal goals and to self-reward oneself on accomplishing those goals. For each student, the values for the self -control variable for each of the five behaviors were computed as follows:

Self -control for 30 min or more of physical activity: item 45 + item 46

Self -control for 2 hrs or less of watching television: item 50 + item 51

- *Self -control for drinking water instead of sweetened beverages:* item 55 + item 56
- *Self -control for eating 5 or more servings of fruits and vegetables:* item 60 + item 61
- *Self -control for eating smaller portion size*: item 65 + item 66

Computing the variable this way will mean that the value for self –control for each student in each of the five behaviors will range from 0 – 8. For example, if a randomly selected student responded "Completely Sure = 4" for item 60 and responded "Completely Sure = 4" for items 61, then for such a student, the Score for self -control for eating 5 or more servings of fruits and vegetables = 4 + 4=8. The scores for the remaining four behaviors for this student will be computed the same way.

Independent Variables (Used as Covariates):

It is possible to believe that students who were taught the importance of exercise and healthy eating as part of their weekly curriculum would behave differently compared to students who were not taught such behaviors.

Gender and age were included in the study as it is believed that certain behaviors like physical activity may differ among boys versus girls and younger versus older students. The instrument for data collection also included questions regarding this covariate (see Table 3).

Table 3

Description of Independent Variables Used as Covariates

s/n	Variable/Description	Data Type	Format
1	Age: Students age, ranging from less than 11 to more than 16yrs	Categorical	continuous >11yrs, 12yrs, 13yrs, 14yrs, 15yrs, 16yrs, >16yrs
2	Gender: Male /female	Categorical	Nominal: male=1, female=0
3	Taught about healthy eating: number of times students were taught in school the past one week.	Categorical	continuous Never=0, once=1, twice=2, three or more times=3

4	Taught about physical activity or exercise: number of times students were taught in school the past one week.	Categorical	Ordinal: Never=0, once=1, twice=2, three or more times=3

Research Questions, Associated Variables, and Statistical Analysis Procedures

The researcher conducted appropriate descriptive and univariate analysis to report relevant statistics and to ensure that assumptions of parametric statistical procedure was used in this work and was not be violated. The following statistical procedures were included, independent variables, and covariates in the analysis related to all five research questions and hypothesis.

- *Statistical procedure:* Linear multiple regression and binary logistic regression except for research question 5, where only Ordinal logistic regression was used.
- *Independent variables:* Expectation, self-efficacy, self-efficacy in overcoming barriers, self-control.
- *Covariates:* Age, gender, race, how often healthy eating was taught, how often physical activity or exercise was taught.

The following research questions guides in this study.

$H_0$1: Select SCT constructs did not predict television-watching behavior among the subject population.

H_a1: Select SCT constructs do predict television-watching behavior among the subject population.

RQ2: To what extent if any did the SCT constructs predict physical activity behavior among the subject population?

$H_0$2: Select SCT constructs did not predict physical activity behavior among the subject population.

H_a2: Select SCT constructs did predict physical activity behavior among the subject population.

RQ3: To what extent if any did select SCT constructs predict water consumption among the subject population?

$H_0$3: Select SCT constructs did not predict water consumption among the subject population.

H_a3: Select SCT constructs did predict water consumption among the subject population.

RQ4: To what extent if any did select SCT constructs predict fruit and vegetable intake among the subject population?

$H_0$4: Select SCT constructs did not predict fruit and vegetable intake among the subject population.

H_a4: Select SCT constructs did predict fruit and vegetable intake among the subject population.

RQ5: To what extent if any did select SCT constructs predict portion size among the subject population?

$H_0$5: Select SCT did not predict portion size among the subject population.

H_a5: Select SCT constructs did predict portion size among the subject population.

Analysis Software and Subject Protection

For this analysis, I employed IBM SPSS version 24, SAS version 9, R-statistical package version 3.2.4 (Revised) and MS Excel to address the research questions. This study demanded a high level of confidentiality. The survey instrument was administered anonymously as respondents was not required to state their name or any other information that would identify them specifically out of the participating population. I coded collected data that did not reveal the identity of any individual respondent. Finally, I obtained informed consent from both parents and participant before conducting the survey. In consideration of the fact that there may be perceptions of a negative grade for refusal to participate as a subject, the instrument in its introduction clearly stated, "This survey is voluntary. You may choose not to complete it or not to answer individual questions. All data from this survey will be anonymous and kept secret. It will not be used for grading …there will be no penalty if you do not participate. The three church leaders have been contacted and obtained their permission before collecting the data, until received Walden University's IRB approval.

Missing Data

Using SPSS, to conduct post analysis in cases of missing data to ensure that they are missing at random. In other words, I did conduct a post analysis to ensure that missing data did not differ systematically from the data used in the analysis. An appropriate imputation technique was used to reanalyze the research questions where necessary to verify that outcomes did not differ significantly because of observations excluded from the missing data.

Storage of Research Data

Retained only data that is needed for this research well stored and securely for five to seven years. Although I created duplicate hard and soft copies, the major location of storage would be online file sharing services (e.g., Drop box) that would allow access to such data from any computer with an internet connection. I had employed online storage since it would facilitate a remote access/backup solution. An individual identification, password, and encryption electronic signatures or watermarking for protecting and keeping track of authorship was implemented for a change that might be made in the data file.

Summary

This research was conducted using survey data obtained from administering the Promoting Healthy Lifestyle Survey. To describe the data, univariate descriptive statistics were employed. Conducted a missing data analysis to ensure that data not missing systematically. A multiple imputation as necessary was used to reanalyze data as necessary to ensure that research outcomes do not differ significantly because of observations excluded due to missing data.

The research questions were addressed using multiple linear regression and logistics regression. The final analysis was enhanced using multiple but compatible statistical applications for tasks where they are most suited: IBM SPSS version 24, SAS version 9, R-statistical package version 3.2.4, G*Power version 3.2.9.2, and Microsoft Excel.

Chapter 4: Data Collection and Analysis

The target population for this study consisted of Hispanic American/Latino children ages 11-15. The study was conducted in three different community churches located in three counties in Georgia (DeKalb was coded as 001, Clayton was coded as 002, and Gwinnett was coded as 003). Data was collected from the three sources using the Promoting Healthy Lifestyle Survey. The researcher liaised with resident church pastors as contacts and Hispanic American facilitators of the study. The facilitators assisted in the process of interpreting for parents who cannot understand English well with consent/assent forms.

Analysis of Missing Data

An analysis of missing data was conducted on 63 variables with data from 235 participants using the survey instrument. This analysis revealed that 20 out of the 235 participants (about 9%) did not respond to one or more of the 63 variables. Missing variable analysis was conducted to ensure that the missing values were missing at random (MAR). Responses missing not at random (MNAR) would indicate that participants may have systematically failed to respond to certain questions for specific reasons. Conclusions drawn from the analysis of a data set with high values of MNAR responses have a high likelihood of producing misleading results (Barnard & Meng, 2012; Horton & Lipsitz, 2013).

The analysis indicated that, overall, 19 out of the 63 variables on which data were collected were missing at least one value. Many of the 19 variables, however, were missing just one value so that less than 1% (27 out of 14,805) of all values were missing (see Figure 1 and Table 4).

Further analysis showed that the missing values were largely missing at random since missing value pattern analysis did not show contiguous missing (see Figure 2).

Table 4

Description Summary of Missing Values

	Missing		Valid N
	N	Percent	
mtv 19	3	1.30%	232
mpa 13	3	1.30%	232
msure 56	2	0.90%	233
msure 47	2	0.90%	233
msure 46	2	0.90%	233
mimp 41	2	0.90%	233
msure 58	1	0.40%	234
msure 57	1	0.40%	234
msure 55	1	0.40%	234
msure 54	1	0.40%	234
msure 53	1	0.40%	234
msure 52	1	0.40%	234
msure 51	1	0.40%	234
msure 45	1	0.40%	234
msure 43	1	0.40%	234
msure 42	1	0.40%	234
msov 27	1	0.40%	234
msov 24	1	0.40%	234
mgow 21	1	0.40%	234

Note. See Appendix E for variable definitions.

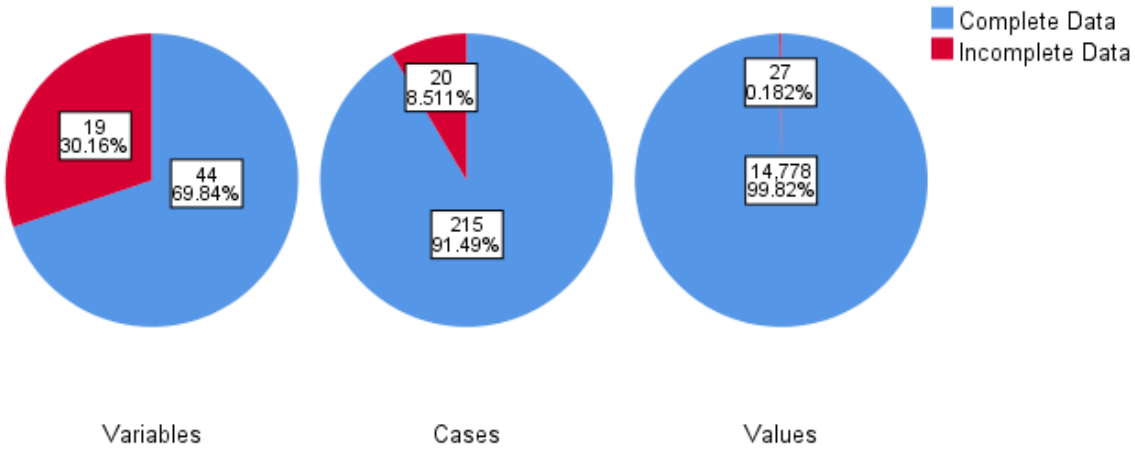

Figure 1. Overall summary of missing variables, cases, and values.

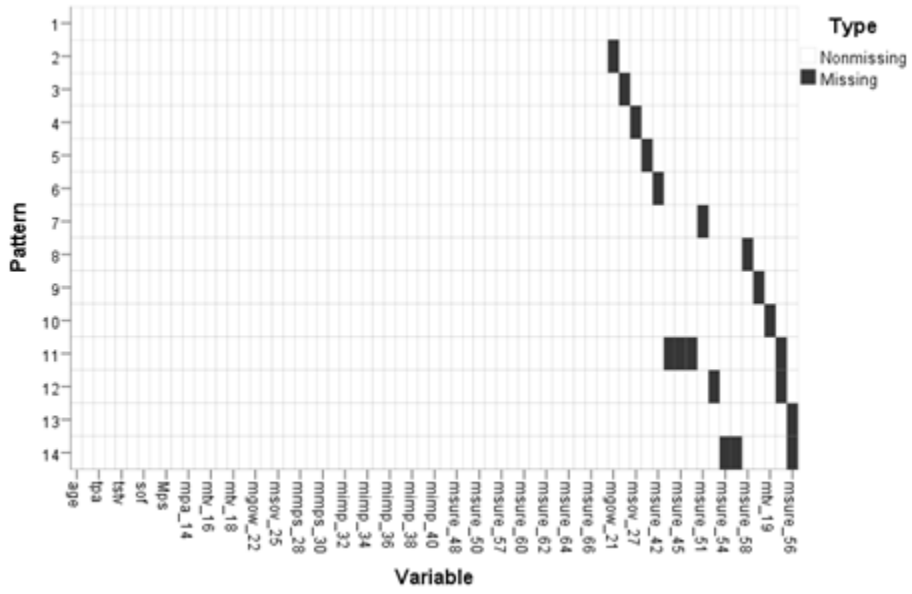

Figure 2. Analysis of missing value patterns.

Data therefore indicates that the result of inferences made without the missing values would not be biased, given that the overall percentage of missing values is less than 1% and there was no

continues missing data, which would have suggested that respondents were not responding systematically to certain questions.

Outcome of Analysis Based on the Research Questions

Demographics

As stated, the target population for this study consists of Hispanic American/Latino children ages 11-15. The study was conducted in three different community churches located in three counties in Georgia (DeKalb, Clayton and Gwinnett counties). Data was collected using the Promoting Healthy Lifestyles Survey. The demographics of respondents are as follows:

Table 5

Participants by Gender and Age

	Male (n=85)					Female (n=130)				
Age	11	12	13	14	15	11	12	13	14	15
Number	14	28	15	15	13	25	46	29	15	15
Percent	17	33	18	18	15	19	35	22	12	12

Using the five research questions as a guide, analysis was subsequently conducted to determine the extent to which SCC construct measures of expectation, self-efficacy, self-efficacy for overcoming barriers, and self-control can be used to predict specific obesity prone behaviors among the participants, controlling for demographic variables.

Research Question 1

To what extent, if any, did select social construct theory predict television-watching behavior within the subject population?

Table 6

Expectation Measures Related to Question 1 Responses

	Male (n=85)			Female (n=130)		
	Mean	SD	Range	Mean	SD	Range
Time (hrs) spent watching TV (tstv)	1.48	1.23	5	1.78	1.11	5
Expectation for watching TV (exptntv)	17.15	5.88	20	17.35	8.06	49
Self-efficacy for watching TV (selfetv)	1.26	0.9	3	1.22	0.86	3
Self-efficacy in overcoming barriers for watching TV (selfebtv)	2.51	1.96	6	2.37	1.77	6
Self-Control for watching TV (selfectv)	2.45	2.01	6	2.34	1.81	6

*The measures of expectation, self-efficacy, self-efficacy in overcoming barriers, and self-control were computed as discussed in Chapter 3.

A multiple linear regression model was applied to the data address this research question (see Appendix D):

$$Y_{tstv} = \beta_0 + \beta_{exptntv} + \beta_{selfectv} + \beta_{gender} + \beta_{tpa2} + \varepsilon_i$$

The model, overall, accounted for about 8% percent of the variation in time spent watching television among respondents (see Table 7).

Table 7

Multiple Regression Analysis Summary for Television Watching Within the Prior 24 Hours (n = 215)

Variable	ß	SE(ß)	t	Sig.(p)
Expectation for watching TV (exptntv)	-0.03	0.01	2.94	0.004 **
Self-Control for watching TV (selfectv)	-0.07	0.04	1.63	0.11
Gender (male)	-0.30	0.16	1.92	0.06
Number of times physical activity was taught in past week (tpa2: more than 2 (times)	-0.37	0.22	1.66	0.10
Adjusted R^2 = 0.081				
F=5.69				0.00023

Note. Number of times physical activity was taught in past week(tpa2) is a dichotomous variable: 2 time or less versus more than 2 times; **p<0.01.

In terms of social construct theory, the results indicate that for every 1-unit increase in the indices of expectation for watching tv, there is, on average, a decrease of about 0.03 hours (2 minutes) in time spent watching TV among the respondents, controlling for all other explanatory variables (p-value =0.00). Self-control for television watching was also found to decrease amount of time spent watching television by 0.07 hours (4 minutes) among respondents (p = 0.1). The effects of self-efficacy and self-efficacy for overcoming barriers for watching TV were not significant.

The result also indicated that after accounting for the effects of all included explanatory variables, males spent 0.3 hours (18 minutes) less time, on average, watching television compared

to females (*p*-value=0.06). The number of times students were taught physical activity in school had a significant effect on the amount of time respondents spent watching television. Students who reported being taught physical activity more than twice a week spent about 0.37 hours (22 minutes) less time, on average, watching television compared to those taught physical activities twice or less in a week (*p*-value =0.1).

Table 8

Multiple Regression Analysis Summary for Television Watching Within the Past 24 Hours (*n* = 215)

Variable	ß	SE(ß)	t	Sig.(*p*)
Expectation for watching TV (exptntv)	-0.03	0.01	-2.9	0.00 **
Self-Control for watching TV (selfectv)	-0.07	0.04	-1.6	0.1
Gender (male)	-0.3	0.15	-1.9	0.05
Number of times physical activity was taught in past week (tpa2: more than (2 times)□	-0.4	0.2	-1.7	0.1
Adjusted R^2 = 0.1				
F=5.69				0

□ Number of times physical activity was taught in past week (tpa2) is a dichotomous variable: 2 times or less versus more than 2 times.
*p <0.05, **p <0.01, ***p<0.001

Using 2 hours of television watching as the demarcation, the logistic regression model underlying Table 9 was subsequently used to investigate odds of watching television for 2 hours or more between males and females.

$$log\left[\frac{p}{1-p}\right] = \beta_0 + \beta_{gender} + \varepsilon_i$$

The result revealed that, compared to females (see Table 9), males are 53.3% less likely to have watched television for 2 hours or more within the past 24 hours (see Table 10).

Table 9

Time Spent Watching Television (Reference Category = Female)

Variables/Categories	Odds Ratio (n=215)
Watched television for more than 2 hours	0.467 [0.2657, 0.812] **

*p <0.05 **p <0.01 ***p <0.001

Note. Odds ratios and 95% confidence intervals for the association between gender and time spent watching television (p equals the probability that the respondent watched television for 2 hours or more within the last 24 hours).

Table 10

Time Spent Watching Television (Reference Category = Male)

Variable	ß	SE(ß)	t	Sig.(p)
Expectation for watching TV (exptntv)	-0.03266	0.01113	-2.94	0.00371 **
Self-Control for watching TV (selfectv)	-0.06953	0.04276	-1.63	0.10546
Gender (male)	-0.29891	0.15588	-1.92	0.05652
Number of times physical activity was taught in past week (tpa2: more than 2times)□	-0.36828	0.22142	-1.66	0.09775
Adjusted R^2 = 0.081				
F=5.69				0.00023

□ Number of times physical activity was taught in past week(tpa2) is a dichotomous variable: 2time or less Vs More than 2times

*p <0.05 **p <0.01 ***p <0.001

Using 2 hrs of television watching as demarcation, the logistic regression model below was subsequently used to investigate odds of watching television for 2 hrs or more between boys and girls.

$$\log\left[\frac{p}{1-p}\right] = \beta_0 + \beta_{\text{gender}} + \varepsilon_{\text{i}}$$

The result indicated that compared to girls, boys are 53.3% less likely to have watched television for 2 hrs or more within the past 24 hrs.

Research Question 2

To what extent if any does select social construct theory predict physical activity behavior among the subject population?

Table 11

Multiple Regression Analysis for Time Spent on Physical Activity Within the Past 24 Hours (n=215)

	Male (n=85)			Female (n=130)		
	Mean	SD	Range	Mean	SD	Range
Time (minutes) spent on physical activity (tspa)	34.51	12.82	65	23.72	16.21	66
Self-efficacy for physical activity (selfepa)	1.58	0.82	3	1.59	0.77	3
Age	12.82	1.33	4	12.61	1.25	4

*The indices for expectation, self-efficacy, self-efficacy in overcoming barriers, and self-control were computed as outlined in chapter 3. For gender and number of times healthy eating was taught (the 2) can be found on Table 18

Using variable selection and iterative approach based on parsimony considerations, the following multiple linear regression model was considered best to address this research question:

$$Y_{tspa} = \beta_{selfepa} + \beta_{age} + \beta_{gender} + \beta_{the2} + \varepsilon_i$$

The model overall accounted for about 24% percent of the variation in time spent watching television among respondents (see Table 12). (See Appendix D for detailed variable selection procedure and assumption verification for this model and see Appendix E for the definition of variables.) With respect to the measures of social construct theory, the result of analysis for research question 2 were that for every 1-unit increase in the indices of self-efficacy for physical activity, there was, on average, an increase of about 5 minutes spent on physical activity controlling

for age, gender, and number of times students were taught healthy eating in school (*p*-value <0.001). All other social cognitive theory measures were found to have no significant effect on time spent on physical activities by respondents.

Table 12

Odds Ratios and 95% Confidence Intervals for the Association Between Gender (reference category=female) and Time Spent on Physical Activity (Probability Modeled: P Is the Probability that the Respondent Watched Television for 2 hours or More Within the Last 24 Hours)

Variables/Categories	Odds Ratio (n=215)
Spent more than 30min in physical activity	4.9 [2.7, 9.2] **

*p <0.05 **p <0.01 ***p <0.001

Research Question 3

To what extent if any did select social construct theory predict water consumption among the subject population?

Table 13

Description of Independent Variables Used as Covariates

	Male (n=85)			Female (n=130)		
	Mean	SD	Range	Mean	SD	Range
Number of glasses of water student drank in the past 24hrs(*gow*)	1.99	1.52	5	1.8	1.41	4
Self-efficacy for drinking water (selfedw)	1.14	0.98	3	1.15	0.89	3
Self-control for drinking water (selfecdw)	1.94	1.84	6	2.09	1.72	6
Age	12.82	1.33	4	12.61	1.25	4

Note. The indices for expectation, self-efficacy, self-efficacy in overcoming barriers, and self-control were computed as outlined in chapter 3. Descriptive for number of times healthy eating and physical activity were as taught (the2 and tpa2 respectively) can be found on Table 1.

Using variable selection and an iterative approach based on parsimony considerations, the following multiple linear regression model was considered best to address this research question:

$$Y_{gow} = \beta_{selfedw} + \beta_{selfecdw} + \beta_{age} + \beta_{tpa2} + \beta_{the2} + \varepsilon_i$$

The model, overall, accounted for about 27.4% percent of the variation in number of glasses of water consumed among respondents (see Table 13). Analysis of research question 3 showed that for every 1-unit increase in the index of self-efficacy for drinking water, there is, on average, an additional 1/3 of a glass of water consumed by the respondents, controlling for all other variables included in the model above (p-value = 0.02). Similarly, there was on average, an additional 1/5

of glass of water consumed for every 1-unit increase in self-control for drinking water, controlling for all other included variables in the model above (*p*-value = 0.00). Other social construct measures (expectation for drinking water and self-efficacy for overcoming barrier for drinking water) were found to have insignificant effect on number of glasses of water consumed by respondents, as shown in (Table 14).

Considering the covariates and controlling for included explanatory variables, the results indicated that for every 1-year increase in the age of participating students, an additional 1/5 of a glass of water was consumed, on average, among the respondents (*p*-value=0.01). Students who reported being taught physical activity more than 2 times a week, on average, consumed additional 2/3 of a glass of water in the past 24 hours compared to those taught physical activity twice or less in a week (*p*-value =0.01). Students who reported being taught healthy eating more than 2 times a week were shown to have drunk about 2/3 of a glass of water less than those taught healthy eating twice or less in a week (*p*-value =0.01).

Table 14

Summary of Multiple Regression Analysis for Number of Glasses of Water Student Consumed in the Past 24 hours (N=215)

Variable	ß	SE(ß)	T	Sig.(*p*)
Self-efficacy for drinking water (selfedw)	0.32	0.14	2.3	0.02 *
Self-control for drinking water (selfecdw)	0.23	0.07	3.3	0.00 **
Age	0.19	0.07	2.58	0.01 *
Number of times physical activity was taught in past week (tpa2: more than 2times)□	0.69	0.27	2.53	0.01 *
Number of times healthy eating was taught in past week (the2: more than 2times) ‡	-0.61	0.24	-2.55	0.01 *
Adjusted R^2 = 0.2739				
F=17.15				<0.00

□ Number of times physical activity was taught in past week(tpa2) is a dichotomous variable: 2 times or less versus more than 2times

‡ Number of times healthy eating was taught in past week(the2) is a dichotomous variable: 2 times or less versus more than 2times

*p <0.05 **p <0.01 ***p <0.001

A logistic regression model could not be implemented for research question 3 to determine differences among gender in drinking up the ideal 8 glasses of water a day because all responses were below the demarcation value of 8 glasses of water.

Research Question 4

To what extent if any does select social construct theories predict fruit and vegetable intake among the subject population?

Table 15

Multiple Regression Analysis Summary for Consumption of Fruits and Vegetables

	Male (n=85)			Female (n=130)		
	Mean	SD	Range	Mean	SD	Range
Number of servings of fruits and vegetable consumed in the past 24 hours (sofv)	2.86	2.16	8	3.33	2.14	10
Expectation for eating fruits and vegetables (exptnsofv)	17.74	7.37	30	16.49	7.45	32
Self-control for eating fruits and vegetables (selfecsofv)	1.66	1.83	6	1.78	1.76	6
Age	12.82	1.33	4	12.61	1.25	4

were computed as outlined in chapter 3. Description for gender can be found on Table 15.

Using variable selection and iterative approach, and based on considerations for parsimony, the following multiple linear regression model was considered best to address this research question: The above model, overall, accounted for about 28.9% percent of the variation in number of servings of fruits and vegetables consumed among respondents (see Table 16).

Table 16

Summary of Multiple Regression Analysis for Number of Servings of Fruits and Vegetables Consumed by Students in the Previous 24 Hours (N=215)

Variable	ß	SE(ß)	T	Sig.(p)
Expectation for eating fruits and vegetables (exptnsofv)	0.06	0.02	2.96	0.00 **
Self-control for eating fruits and vegetables (selfecsofv)	0.33	0.09	3.51	0.00 ***
Age	0.5	0.11	4.62	6.74e-06 ***
Gender (male)	-0.62	0.28	-2.24	0.03 *
Adjusted R^2 = 0.2887				
F=22.72				<0.00

*p <0.05 **p <0.01 ***p <0.001

Analysis of research question 4 indicates that for every 1-unit increase in the indices of expectation for eating fruits and vegetable, there is, on average, an additional 1/10 the of servings of fruits and vegetables consumed among the respondents, controlling for all other variable included in the model above (p-value = 0.00). Also, on average, an additional 1/3 of servings of fruits and vegetables were consumed for every 1-unit increase in the index for self-control for eating fruits and vegetables, controlling for all other included variables in the model above (*p*-value =0.00). Other social construct measures (self-efficacy for overcoming barrier and self-efficacy for eating vegetables and fruits) were found to have insignificant effect on number of servings of fruits and vegetables consumed by respondents (see Table 16).

Considering the covariates and controlling for included explanatory variables, the result indicated that for every 1-year increase in the age of participating students, an additional 1/2

serving of fruits and vegetable was consumed, on average, among the respondents (p-value <0.00). Compared to females, males consumed about 2/3 less servings of fruits and vegetables within the past 24 hours (*p*-value =0.03). A logistic regression model could not be implemented for research question 4 to determine differences between males and females with respect to consuming the ideal amount of 5 servings per day because only four of the responses were above the demarcation value of 5 servings of fruits and vegetables per day.

Research Question 5

To what extent if any did select social construct theory predict portion size among the subject population?

Table 17

The Logistic Regression on Portion Size

	Male (n=85)			Female (n=130)		
	Mean	SD	Range	Mean	SD	Range
Expectation for small meal portion size(exptnsps)	17.39	8.05	32	17.26	7.71	35
Self-efficacy for small meal portion size(selfesps)	0.81	0.92	3	0.9	0.89	3
Self-efficacy for overcoming barriers regarding meal portion size(selfebsps)	1.62	1.84	6	1.76	1.78	6
Self-control regarding meal portion size(selfecsps)	1.65	1.82	6	1.85	1.75	6
Age	12.82	1.33	4	12.61	1.25	4

*The indices for expectation, self-efficacy, self-efficacy in overcoming barriers, and self-control were computed as outlined in chapter 3. The meal portion size, number of times of healthy eating. The number of respondents whose typical meal portion sizes are small or very large were both less than 5

The following model was used to analyze the data:

$$log\left[\frac{p}{1-p}\right] = \beta_0 + \beta_{exptnsps} + \beta_{selfesps} + \beta_{selfebsps} + \beta_{selfecsps} + \beta_{age} + \beta_{gender} + \beta_{tpa2} + \beta_{the2} + \varepsilon_i$$

Where *p* is the probability that the participant's typical meal portion size is large or very large. The logistic regression test for model fit using the logistic model above indicated that the model was

appropriate ($X^2_{(5)}$ =52.37, P<0.00). Analysis showed that in terms of social construct theory measures, the probability of students consuming large or very large meal portion sizes compared to consuming small or medium meal portion sizes decreases by 14.07%, on average, for every 1-unit increase in the index for measuring an expectation of small portion size (odds ratio=0.86, 95% CI=0.81, 0.90). Similarly, for every 1-unit increase in the index for measuring students' self-control for meal portion size, the likelihood of participants consuming large or very large meal portion sizes decreases by 59.09%, on average (Odds ratio=0.41, 95% CI=0.07, 1.34). The results for the remaining two social construct measures (self-efficacy and self-efficacy for overcoming barriers) showed overly poor precision to be accepted as reliable, that is, their confidence bounds are too large comparatively (see Table 17).

With reference to the covariates, the results indicated that after accounting for all other variable in the model above, the probability of consuming large or very large meal portion size decreases by about 7%, on average, for every 1yr increase in participants age (Odds ratio=0.92, 95% CI=0.71, 1.19). Males are 85%, on average, more likely to consume large or very large meal portion sizes in comparison with females (Odds ratio=1.85, 95% CI=0.97, 3.60). Students who are taught physical activity three times or more in a week are about 66% more likely to eat large or very large portion size than small or medium meal portion size compared to students who were taught about physical exercise less than 3 times in a week (Odds ratio=1.66, 95% CI=0.55, 4.99). Students who were taught about healthy eating three times or more in a week were 2.76 times more likely to consume large or very large portion size than small or medium meal portion size compared to students who were taught about healthy eating less than 3 times in a week. The precision of the

outcome in this instance is however too poor for the result to be taken as reliable. i.e., the confidence bounds are comparatively too large (see Table 17).

Table 18

Odds Ratios and 95% Confidence Intervals for the Association Between Variables of Interest and Meal Portion Size

Variables/Categories	Odds Ratio (n=215)
Expectation for eating small portion size (exptnsps)	0.86 [0.80, 0.90]
Self-efficacy for overcoming barrier for portion size (selfebsps)	2.11 [0.30, 18.06]
Self-control for portion size (selfecsps)	0.40 [0.07, 1.34]
Age	0.92 [0.71, 1.19]
Reference category = female	
Gender	1.85 [0.96, 3.60]
Reference category= tpa2 less than 3	
Number of times physical activity were taught in a week(tpa2).	1.65 [0.55, 4.99]
Reference category=the2 equal to 3 or more	
Number of times healthy eating taught in a week (the2).	2.76 [1.01, 8]

⍰Number of times physical activity was taught in the past week (tpa2) is a dichotomous variable: 2 times or less versus more than 2 times
‡ Number of times healthy eating was taught in past week (the2) is a dichotomous variable: 2 times or less versus more than 2 times
*p <0.05 **p <0.01 ***p <0.001

Summary of Findings

The purpose of the study was to ascertain the extent to which the social cognitive theory constructs of expectations, self-efficacy, self-efficacy in overcoming barriers, and self-control predict the obesity prone behaviors among upper elementary Hispanic American children,

specifically, time spent watching television, time spent on physical activity, lack of consumption of fruit and vegetables, lack of consumption of water, and eating large meal portion sizes. Using Promoting Healthy Lifestyles Survey (Sharma et al., 2014.), data was collected on demographics and on indices used as quantitative measures of the selected social constructs from 235 upper elementary children aged 11 to 15 year who were of Hispanic American origin in three counties in Georgia: DeKalb, Clayton, and Gwinnett.

After accounting for missing data, 215 respondents were found to have responded to all questions and were, therefore, included in the analysis. Participants with missing data were analyzed to ensure that their lack of response to certain questions was not systematic or the result of specific reasons, which would have otherwise biased the findings. It was established that the missing data was not systematic, but the result of chance. Five research questions were targeted by the enquiry:

1. To what extent if any does select SCT constructs predicts television-watching behavior among the subject population?
2. To what extent if any does select SCT constructs predict physical activity behavior among the subject population?
3. To what extent if any does select SCT constructs predict water consumption among the subject population?
4. To what extent if any does the select SCT constructs predict fruit and vegetable intake among the subject population?

5. To what extent if any does select SCT constructs predict portion size among the subject population?

Findings Regarding Social Construct Theory Measures

Expectation with respect to the social construct theory measure of expectation, after controlling for all other explanatory variables included in the study, analysis revealed that for every 1-unit increase in the index of expectation: there was, on average, a decrease of about 2 minutes in time spent watching tv among the respondents (ß = -0.03hrs, p-value =0.00).There was, on average, an additional 1/10 of a serving of fruits and vegetables consumed among the respondents (ß = 0.02, p-value = 0.00). The study also indicated that the probability that students would consume large or very large meal portion sizes compared to consuming small or medium meal portion sizes decreases by 14.07%, on average, for every 1-unit increase in the index for measuring expectation for small portion sizes (odds ratio=0.86, 95% CI=0.81, 0.91).

There was no significant effect on the social construct of expectation for time spent on physical activity or on number of glasses of water consumed by participants. With respect to social construct theory measure of self-efficacy, after controlling for all other explanatory variable included in the study, analysis indicated that for every 1-unit increase in the indices for measuring the social construct of self-efficacy, there was, on average, an additional 1/3 glass of water consumed among the respondents, controlling for all other variable included in the model above (ß = 0.31, p-value = 0.02). Other than the above, self-efficacy was found to have no significant or reliable effect on any other of the remaining four behaviors in this study.

Self-efficacy for Overcoming Barriers

With respect to social construct theory measure of self-efficacy for overcoming barriers, after controlling for all other explanatory variable included in the study, the analysis indicated that self-efficacy for overcoming barrier has no significant or reliable effect on any of the five obesity prone behaviors under study. However, with respect to social construct theory measure of self-control, after controlling for all other explanatory variable included in the study, the analysis indicated that for every 1-unit increase in the index of self-control. There was about a 4-minute decrease in the amount of time spent watching television among respondents (ß = -0.07hrs, p-value=0.10). There was, on average, an additional 1/5 glass of water consumed among respondents (ß =0.23, p-value = 0.00). There was, on average, an additional 1/3 serving of fruits and vegetables (ß =0.33, p-value =0.00). The likelihood of participants consuming large or very large meal portion size decreased by 59.09%, on average (odds ratio=0.40, 95% CI=0.07, 1.34). There was no significant effect of self-control on time spent on physical activities.

Findings Regarding Covariates

Gender. In summary, findings indicated that participants' gender played a major role in participants disposition toward many of the obesity prone behaviors that are of interest in this study. After accounting for social construct theory measures and other covariates, analysis indicated, compared to females: Males spent 18 minutes less time, on average, watching television (ß = -0.291hrs, p-value=0.05). Males spent 11 minutes more, on average, on physical activity (ß = 10.62 min, p-value < 0.00). Males consumed less fruits and vegetables within the past 24 hours at the time of data collection by about a 2/3 serving (ß = -0.62, p-value =0.03). Boys are 85%, on average, more likely to consume large or very large meal portion size, compared to females (Odds

ratio=1.85, 95% CI=0.96, 3.60). There was no significant gender effect on the number of glasses of water consumed. Age was found to have significant effect after controlling for all included variables.

Age. Analysis indicated that for every 1-year increase in age: There was an average increase of 3 more minutes of exercise among respondents (ß = 2.54 min, p-value =.0.001). There was an additional 1/5 glass of water consumed, on average, among the respondents (ß = 0.2, 0.19, p-value=0.01). There was an additional 1/2 serving of fruits and vegetable consumed, on average, among the respondents (ß =.0.5, p-value <0.00). The probability of consuming a large or very large meal portion size decreases by about 7%, on average (odds ratio 1.0, 95% CI=.0.7, 1.2). There was no age effect on time spent watching television.

Physical Activity

For students who reported being taught physical activities three or more times a week, the findings showed: These students spent about 22 minutes less time, on average, watching television compared to those who were taught physical activities twice or less in a week (ß = -.48 hrs, p-value =.1). They consumed an additional 2/3 glass of water in the prior 24 hours compared to those who were taught physical activity twice or less in a week (ß =, p-value =0.01). They were about 66% more likely to eat large or very large portion sizes than small or medium meal portion sizes compared to students who were taught physical exercise less than 3 times in a week (odds ratio=1.66, 95% CI=0.55, 4.99). There was no significant effect of being taught physical activities on the number of servings of fruit and vegetable consumed by participants. Somewhat counterintuitively, there was also no significant effect of being taught physical activity on amount

of time spent by participants on physical activities in the prior 24 hours at the time the survey was administered.

Healthy Eating

For students who reported being taught about healthy eating three or more times a week, the results showed: These students spent about 6 more minutes, on average, on physical activity compared to those taught healthy eating twice or less in a week (ß =6.08, p-value =.0.01). They drank about 2/3 of a glass of water less than those taught healthy eating twice or less in a week (ß = -0.6, 0.61, p-value =0.01). There was no significant effect of being taught healthy eating 3 times or more on time spent watching television or on number of servings of fruits and vegetables consumed compared to those who were taught healthy eating less than 3 times in the past week. Counter intuitively, students who are taught about healthy eating three times or more in a week were shown to be 2.8 times more likely to consume large or very large portion sizes than small or medium meal portion sizes compared to students who were taught about healthy eating less than 3 times in a week. The precision of the outcome of analysis in this instance was too poor for the result to be taken as reliable; that is, the confidence bounds were comparatively too large (odds ratio=2.8, 2.8 95% CI=1.01, 8.32).

Chapter 5: Conclusions, Recommendations, Limitations

This chapter reviews the goals some findings of this study. Its recommendations, limitation, significant findings in this project, the purpose of the study, the limitations, and summary discussed. The goal of this quantitative cross-sectional study was to ascertain the extent to which the SCT constructs of expectations, self-efficacy, self-efficacy in overcoming barriers, and self-control predict duration of television viewing and physical activity, consumption of fruit and vegetables and water, and portion size of food for upper elementary Hispanic American children in the context of Hispanic Americans from three community churches in three different counties (Clayton, DeKalb, Gwinnett) Georgia.

The primary social constructs employed in this study are defined briefly as follows:

- *Expectations:* a function of actual results, anticipatory effects of behavior, or the value that a person places on a given outcome
- *Self-control:* the ability to set personal goals and reward yourself for accomplishing those goals. It involves setting goals that are proximal and distal and adjust the course for changes in behavior
- *Self-efficacy:* behavior-specific confidence in one's ability to influence one's habits
- *Self-efficacy in overcoming barriers*: This term refers to behavior-specific confidence in one's ability to influence one's habits in the presence of inhibiting factors

Sharma et al. (2016), had a study population that was predominantly Caucasian (64.7%) and African American or African American (22.8%). Children of Hispanic American or Latino origin were not part of the study, an extensive search of literature showed that Sharma et al.'s work

closely matched with this study in terms of predictors and covariates. Their results are being compared with the findings in this project.

Interpretation of the Findings

RQ1 examined the extent to which select SCT constructs predicts television-watching behavior in the target population. The results indicated that, among the four social cognitive constructs examined, only the social cognitive construct of expectation had a clear predictive effect on time spent watching television ($p = .00$). In addition to the construct of expectation, self-control ($p = 0.10$), gender ($p = .06$), and the number times a physical activity was taught in a week ($p = .1$) altogether explained about 8% of the variation in time spent watching television (adjusted $R^2 = 0.1$).

In the same study using the same set of predictors, but among a predominantly Caucasian population (64.7%), Sharma (2006) found that only self-control and number of times healthy eating was taught in school were significant predictors and both accounted for about 5.5% of variation in television watching. Both Sharma et al. and this study have the construct of self-control as common effective predictors. Differences in outcomes among covariates may be attributed to demographics.

Focusing on the predictive impact of childhood obesity, the descriptive statistics for this study indicated that, on average, males spent about 1.5 hours watching television within the prior 24 hours before the survey, and females spent about 2 hours (see Table 14). Using 2 hours of television watching as a demarcation, the logistic regression model result indicated that compared to females, males are 53.3% less likely to have watched television for 2 hours or more

within the prior 24 hours. It was also found that for the social cognitive construct of expectation, every 1-unit increase in the indices of expectation for watching TV, leads to on average a decrease of about 0.03 hours (2 minutes) in time spent watching TV among the respondents, controlling for all other explanatory variables ($p = 0.004$; see Table 3). However, across all respondents, on average, both males and females reported about 17 units of measure of expectations (expected positive benefits) for watching less television. Assuming a linear relationship and proportional matching, this will amount to a decrease of about 34 minutes (17 x 2 minutes) of TV watching among the target population. By extension, it will require increasing a child's expectation by 90 units of the measure of expectation to reduce time spent watching television to the accepted 2 hours a day for a child who reported the maximum 5 hours of television watching in the prior 24 hours before the survey (i.e., a reduction of 3 hours =180 minutes will require 2 times 90 units of the measure of expectations). This later interpretation had to be taken with reservation since the relationship between the social cognitive construct of expectation and time spent watching television may not necessarily be linear or directly proportional.

Findings related to RQ1, therefore, suggest that, among the target population, increasing a child's social cognitive construct of expectation will have the most impact among all predictors in this study and that females may need higher intensity and/or different programs set to reduce time spent watching television compared to males given that they are on average 2 times more likely to spend more than 2 hours watching television.

RQ2 concerned the extent to which the select SCT predicted physical activity behavior in the subject population. The analysis indicated that only self-efficacy was found to be a significant predictor of time spent on physical activity ($p < 0.001$). In addition to self-efficacy, age ($p = 0.001$), gender ($p < 0.001$) and number of times healthy eating was taught in a week ($p = 0.01$) altogether explained about 24% of the variation in time spent on physical activity in the target population (adjusted $R^2 = 0.24$). Sharma et al. (2006) reported self-efficacy and number of times physical activity was taught as significant predictor and found that both accounted for 7.2% of the variation in time spent in physical activity. Hence both Sharma et al. and the results of this study found self-efficacy to be the only social cognitive construct that had a significant predictive effect on time spent in physical activity.

Considering the covariates of age, gender, and the number of times healthy eating was taught in the prior week, the results seems intuitive. Soccer seems to be a very popular game among males in the demographic, but there seems to be no such popular sport for females outside of school. The fact that the survey was conducted over the weekend in churches may have meant that males were more physically active playing soccer on a Saturday, for example. However, the absence of number of times physical activity was taught as a significant predictor was, however, counter-intuitive and needs to be further investigated.

RQ3 examined the extent to which select SCT predicted water consumption among the subject population. Among the four social cognitive constructs, self-efficacy ($p = 0.02$) and self-control ($p = 0.001$) were found to be significant predictors for water consumption. In addition to self-efficacy and self-control, age ($p = 0.01$), the number of times physical activity was taught (p

= 0.012), and the number of times healthy eating was taught (p = 0.01) altogether accounted for about 27% of variation in water consumption among respondents (adjusted R^2 = 27.39). Sharma (2006) reported finding that only the social cognitive construct of expectation significantly predicted water consumption (R^2 = 9).

RQ4 examined the extent to which select social construct theories predicted fruit and vegetable intake among the subject population. The social cognitive constructs of expectation (p =0.003) and self-control (p = 0.00) were found to be significant predictors of fruits and vegetables consumption among the four social cognitive constructs being studied. In addition to expectation and self-control, age (p < 0.001) and gender (p = 0.03) together explained about 28% of variation in fruits and vegetable consumption (adjusted R^2 = 0.28).

RQ5 examined the extent to which select social construct theories predicted portion size among the subject population. Binary logistic regression was used to analyze the odds of eating large or very large portion sizes versus small or medium food portion sizes. The analysis indicated that, on average, the construct of expectation decreased the odds of consuming large or very large portion sizes by 14.07%, and self-control decreased the odds by 59.09%. Other social cognitive constructs showed inadequate precision to be accepted as reliable (i.e., overly wide confidence bounds).

With reference to the covariates, males were found to be 85%, on average, more likely to consume large or very large meal portion sizes compared to females (odds ratio=1.85, 95% CI=0.96, 3.60). However, students who were taught physical activity three times or more in a week were found to be about 66% more likely to eat large or very large portion sizes than small or

medium meal portion sizes compared to students who were taught about physical exercise less than 3 times in a week (odds ratio=1.65, 95% CI=0.55, 4.99). A possible explanation here could be that students involved in physical activities tend to eat more. More counter-intuitive is the result that students who were taught about healthy eating three times or more in a week were 2.76 times more likely to consume large or very large portion sizes than small or medium meal portion sizes compared to students who were taught about healthy eating less than 3 times in a week (95% C. I=1.01, 8.32). The results relating number of times physical activity and healthy eating were taught versus the odds of eating large or very large portion size need to be investigated further.

Over all, the ability of the select social cognitive construct theory constructs of expectation, self-efficacy, and self-control to predict listed behaviors of interest in this research did not differ from what could be expected from the literature. This study has, however, unlike previous works in this area, highlighted alignment of specific select constructs with specific behaviors among children of Hispanic American and Latino origin. This study also highlighted the fact that teaching children about healthy eating makes has an influence if taught at least 2 or more times a week. The persisting effect of gender difference was also noted. This points to the fact that a program designed to counteract the studied behavior must be considered for females compared to males to achieve equal improvement in increased time on physical activity and reduced time spent watching television.

Limitations

An important limitation was the small sample size, which precluded generalization of the findings to a more ambitious segment of the Hispanic American population. Also, the subjects

were drawn from no more than one community church in each of three Georgia counties, which further limited generalizability. Another limitation is the near certainty that students had varying levels of reading ability. Therefore, some may have had more difficulty with survey instructions than did others. To ameliorate this challenge, facilitators were instructed to aid participants taking the survey by reading survey questions if they perceived that to be necessary in individual instances.

Potential response inaccuracy owing to forgetfulness is another possible limitation. Survey questions asked the respondents to recall events from the prior 24 hours, and imprecise recall could possibly have distorted the response of certain respondents. Furthermore, the study made no predetermination as to the likelihood of a subject forgetting the exact number of glasses of water or servings of vegetable and fruits consumed within the past 24 hours. There is also the possible limitation in answer bias toward social desirability. For instance, if a child understands that spending less time watching television is considered more desirable, there may be tendency to underreport such behavior. To control this threat to results validity, facilitators were informed of the possibility of their observing such threats before collecting data, and clear directions were given to them to ensure consistent assessment and implementation plan.

Recommendations

From the linear interpretation assuming a proportional relationship between expectation, for example, and time spent watching television implies that a 90-unit increase in expectation will be required to reduce the time a child who spends up to the reported maximum of 5 hours watching tv down to the desired 2 hours. (This study found that every unit of increase in expectation leads

to an average 2-minute decrease in time spent watching television). This researcher recommends further research to answer two related questions:

To what extent and by what mechanism does the frequency of a behavior—e.g., time spent watching tv—decrease as select social construct—e.g., expectation increases. Does this happen linearly, indicating direct proportionality, or is there a curvilinear relationship indicative of a peak and diminishing return at some point?

How could 90 units of the construct of expectation be concretized to determine, for example, what extension of inputs is required to increase a child's expectation by that much? These questions apply to the four-other social cognitive constructs in this study. Due to time and resource constraints, this study could only target a localized population of children of Hispanic American and Latino origin.

The researcher recommends further study of the latency between instruction and survey to determine whether there is a relationship to changes in behavior. It would also be instructive to experiment with the type and duration of instruction to determine the influence of these variables on behavior change. Since this study did not provide definitive evidence in support of social cognitive theory, newer fourth generation multi-theory models such as integrative model of behavioral prediction and multi-theory model of health behavior change need to be utilized by future interventions (Sharma, 2017).

Implications for Social Change

Social change is the motivation that promoted the choice for this study. Being aware of the increased incidence of obesity and its domestic and allied effects are becoming a public health

concern not only in the State of Georgia but in the United States. Just the medical cost of childhood obesity is many, starting with short-term effects such as risk factors for cardiovascular disease, (e.g., high blood pressure and high cholesterol). Obesity also results in pre-diabetes, bone and joint problems, and long-term effects such as heart disease, type 2 diabetes, stroke and cancer of the breast, colon, esophagus, kidney, pancreas, cervix, and thyroid (CDC, 2015b).

This study showed a significant association between childhood obesity and the children's physical activity levels. There were no significant associations between childhood obesity and other variables (portion food size, drinking 8 glasses, eating fruits/ vegetables). The present study provides a foundation for various social changes and efforts that could be directed toward reversing the trend of childhood obesity among Hispanic American children in Georgia. In the literature review we evaluated lack of physical activity sedentary lifestyles (watching TV for more than 2 hours), poor nutrition is some of the assumed causes of obesity. Knowledge of childhood obesity and its resulting challenges is crucial to public health practitioners who must evaluate and implement programs that incorporate real nutrition and address obesity. This study may also be implemented to create and promote a positive social change by educating parents not only the children on the benefits of regular physical activity among Hispanic American children in Georgia.

This improved knowledge and awareness would lead to a significant reduction in the rate of childhood obesity in Georgia and in the 50 States in America. Currently, numerous obesity-control and prevention initiatives and policies have been launched in several states and localities (Chriqui, 2013). A program just like the one CDC is funding for 50 state-based initiatives that aim to control and prevent obesity by promoting physical activity and healthy eating practices (CDC,

2016c). The same goes to local and community-level initiatives to continue to promote behavioral change in the children's physical activity levels, similar interventions could be recommended for other states and minority communities. Supporting and promoting community-based initiatives that focused on environments, social and physical environments in low-income areas could be effective in reducing the prevalence of childhood obesity among American children.

Conclusion

Inactivity and obesity in childhood is more likely to result in inactivity and obesity in adulthood (Jones et al., 2013). Raising a child that is overweight or obese challenges parents economically, socially, and culturally. The notion that education of children relating to obesity factors holds some promise for changing the behavior of children who would otherwise drift toward being overweight and obese. This research establishes the validity of this notion as it applies to church-going school children from the Hispanic American community. Instruction may not be the key to every goal in life, but, coupled with support from home, the use of instruction as an obesity management tool for young children deserves to be developed and tested. This conclusion is reinforced by the findings of this study.

The benefits of the study's findings accrue not only to participants but also to society, directly or indirectly, in curbing the annual medical cost of obesity-related illnesses. The results of the study can lead to the promotion of health education in school children in the form of (a) moderate to intense physical activity of 30 minutes or more daily, (b) a decrease in the length of time watching television to 2 hours a day, (c) drinking of at least 8 glasses of water a day, and (d) eating more vegetables and fruits—at least five servings a day. The framework of social

cognitive theory allows us to understand how effective interventions become possible but seems old and did not suit this target population. Newer multi-theory models need to be utilized by future interventions.

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Appendix A: The Questionnaire

HEALTH FOR ALL IRB# 2018.01.29.16:50:47

Promoting Healthy Lifestyles: Survey

Assent & Directions: This survey is voluntary, which means you may choose not to complete it or not to answer individual questions. There is no direct benefit of this survey to you. All data from this survey will be anonymous and kept secret. Thanks for your help!

1. What is your race?
   - □ Caucasian
   - □ African American or African American
   - □ Asian
   - □ American Indian
   - □ Hispanic American
   - □ Other _____

2. How old are you today?
   - □ Younger than 11 years old
   - □ 12 years old
   - □ 13 years old
   - □ 14 years old
   - □ 15 years old
   - □ 16 years old
   - □ Older than 16 years

……

3. Are you a…? □ Boy

□ Girl

……

4. How many times have you been taught in school about healthy eating?

□ Never

□ Once

□ Twice

□ Three or more class lessons

……

5. How many times have you been taught in school to do physical activity or exercise at home?

□ Never

□ Once

□ Twice

□ Three or more class lessons

……

6. Since yesterday at this time, how many minutes did you exercise at home? (please write)

_____ minutes

……

7. Since yesterday at this time, how many hours TV did you watch? (please write)

_____ hour(s)

……

8. Since yesterday at this time, how many glasses of water did you drink? (please write)

_____ glass(es)

……
.

9. Since yesterday at this time, how many servings of fruits did you eat? (please write)

_____ serving(s)

……
.

10. Since yesterday at this time, how many servings of vegetables did you eat? (please write)

_____ serving(s)

……
.

11. What is your typical portion size in a meal?

□ Small □ Medium □ Large □ Very Large

……
.

	Never	**Hardly Ever**	**Sometimes**	**Almost Always**	**Always**

If I exercise 30 min. daily at home I will . . .

12. … not get sick as often. □ □ □ □ □

……
.

13. …have more confidence. □ □ □ □ □

……
.

14. …have more fun. □ □ □ □ □

……
.

15. …look better. □ □ □ □ □

……
.

If I watch TV less than 2 hours/day I will . . .

16. … have more friends. □ □ □ □ □

……
.

17. …have more free time. □ □ □ □
□

……
.

18. …have more fun. □ □ □ □ □

……
.

19. …be more relaxed. □ □ □ □ □

…….

If I drink water instead of sweetened beverages I will . . .

20. … be more relaxed. □ □ □ □ □

…….

21. …feel better. □ □ □ □ □

…….

22. …have more energy. □ □ □ □ □

…….

23. …have better weight. □ □ □ □ □

…….

	Never	Hardly Ever	Sometimes	Almost Always	Always

If I eat 5 or more servings of fruits and vegetables I will . . .

24. … have more energy. □ □ □ □ □

25. …feel better. □ □ □ □ □

26. …not get sick as often. □ □ □ □ □

27. …have better weight. □ □ □ □ □

If I eat smaller portion size I will…

28. …have better weight. □ □ □ □ □

…….
.

29. …have more energy. □ □ □ □ □

…….
.

30. …feel better. □ □ □ □ □

…….
.

31. …be more relaxed. □ □ □ □ □

…….
.

Not at All- Slightly- Moderately -Very -Extremely

(Important)

How important is it to you that you . . .?

32. … not get sick as often? □ □ □ □ □

…….
.

33. …have more confidence? □ □ □ □ □

…….
.

34. …have more fun? □ □ □ □ □

…….
.

35. …look better? □ □ □ □ □

…….
.

36. … have more friends? □ □ □ □ □

……
.

37. …have more free time? □ □ □ □
□

……
.

38. …be more relaxed? □ □ □ □ □

……
.

39. …feel better? □ □ □ □ □

……
.

Not at All- Slightly- Moderately- Very Extremely-

(Important)

How important is it to you that you . . .?

40. …have more energy? □ □ □ □ □

……
.

41. …have better weight? □ □ □ □
□

……
.

Not at Slightly Moderately Very Completely

Not at All- Slightly -Moderately - Very Completely
(Sure)

How sure are you that you can . . .?

42. … exercise every day for
30 minutes at home? □ □ □ □ □

43. … exercise for 30 minutes
at home even if you are tired? □ □ □ □ □

44. … exercise for 30 minutes
at home even if you are busy? □ □ □ □ □

45. … set goals to exercise every day for
30 minutes at home? □ □ □ □ □

46. … reward yourself with
something you like for exercising? □ □ □ □ □

47. … watch TV no more than
2 hours per day? □ □ □ □ □

48. … reduce watching TV even if your

favorite shows are coming? □ □ □ □ □

……
.

49. … reduce watching TV even if everyone
else in the family is watching? □ □ □ □
□

……
.

50. … set goals to watch TV to no
more than 2 hours per day? □ □ □ □ □

……
.

51. … reward yourself with
something you like for reducing
watching TV? □ □ □ □
□

……
.

52. … drink more water? □ □ □ □ □

……
.

53. … drink water every day
instead of sweet drinks? □ □ □ □
□

……
.

54. … drink more water every day
even if you do not feel thirsty? □ □ □ □
□

……
.

Not at all - Slightly -Moderately- Very- Completely

(SURE)

How sure are you that you can . . .?

55. … set goals to replace sweet drinks with water every day? □ □ □ □ □

……
.

56. … reward yourself with something you like for drinking water instead of sweet drinks? □ □ □ □ □

……
.

57. …eat 5 or more servings of fruits and vegetables every day? □ □ □ □ □

……
.

58. …eat 5 or more servings of fruits and vegetables every day even if you do not like them? □ □ □ □ □

……
.

59. … eat 5 or more servings of fruits and vegetables every day even if others in your family do not like them? □ □ □ □ □

……
.

60. …set goals to eat 5 or more servings of fruits and vegetables? □ □ □ □ □

……
.

61. … reward yourself with something you like for eating 5 or more servings of fruits and vegetables every day? □ □ □ □ □

……
.

62. …eat smaller portion sizes? □ □ □ □ □

……
.

63. … eat smaller portion sizes even when you are hungry? □ □ □ □
□

……
.

64. … eat smaller portion sizes even when family members force you to eat? □ □ □ □
□

……
.

65. …set goals to eat smaller portion sizes? □ □ □ □ □

……
.

66. … reward yourself with something you like for eating smaller portion sizes? □ □ □ □ □

……
.

Thank you for your time!

Appendix B: Student Assent Form

Hello, my name is Augustina Anyikwa and I am doing a research project to learn about Childhood obesity and how we as community can help to prevent it. I am inviting you to join my project. I am inviting all Hispanic American children attending this church from the ages of 11-15. Able to understand, read, and /or write English to be in the study. I am going to read this form with your leader to you. I want you to learn about the project before you decide if you want to be in it.

WHO I AM: I am a student at Walden University. I am working on my doctoral degree and I live in DeKalb County.

ABOUT THE PROJECT: If you agree to be in this project, you will be asked to:

The study will be conducted once at the school, questionnaire will be read out to participants in group if possible. To complete it might take lee than 30 minutes.

Researcher will meet with the participants that met the criteria in a designated area in the church.

Here are few sample questions:

□ African American or African American

□ Asian

□ American Indian

□ Hispanic American

□ Other _____

…….

How old are you today?

□ Younger than 11 years old

□ 12 years old

□ 13 years old

□ 14 years old

□ 15 years old

□ 16 years old

□ older than 16 years

……

Are you a…? □ Boy

□ Girl

……

How many times have you been taught in school about healthy eating?

□ Never

□ Once

□ Twice

□ Three or more class lessons

……

How many times have you been taught in school to do physical activity or exercise at home?

□ Never

□ Once

□ Twice

 Three or more class lessons

IT'S YOUR CHOICE: You don't have to be in this project if you don't want to. If you decide now that you want to join the project, you can still change your mind later. If you want to stop, you can. Being in this project might make you tired or stressed, just like 30 minutes or more completing the survey just one time. But we are hoping this project might help others by eating healthy and being physically active may reduce the incidences of obesity and diseases that comes with it therefore helping people to live longer and healthy.

No payment. There is no personal gain, but individual participants will be made aware how their participation will assist in informing positive social change in prevention of childhood obesity in the community.

PRIVACY:

Everything you tell me during this project will be kept private. That means that no one else will know your name or what answers you gave. The only time I must tell someone is if I learn about something that could hurt you or someone else.

ASKING QUESTIONS:

You can ask me any questions you want now. If you think of a question later, you or your parents can reach me at 404 464 6925. If. If you or your parents would like to ask my university a question, you can call 612-312-1210.

I will give you a copy of this form to keep.

If you want to join the project, please sign your name below.

Name _____

Signature _____

Date _____

Researcher Signature _____

IRB will enter approval number here and it expires on **IRB will enter expiration date**.

The researcher will give you a copy of this form to keep.

Obtaining Your Consent

If you feel you understand the study well enough to decide about it, please indicate your consent by signing below.

Printed Name of Parent	_____
Printed Name of Child	_____
Date of consent	_____
Parent's Signature	_____
Researcher's Signature	_____

Appendix C

Model Selection and Verification of Model Assumptions

Research Question 1

To what extent if any does select social construct theory predicts television-watching behavior among the subject population?

First a multiple linear regression model including all considered variable was used.

$$Y_{tstv} = \beta_0 + \beta_{exptntv} + \beta_{selfetv} + \beta_{selfebtv} + \beta_{selfectv} + \beta_{age} + \beta_{gender} + \beta_{tpa2} + \beta_{the2} + \varepsilon_i$$

See appendix E for definition of variables.

Analysis of the regression output indicated that there is multicollinearity among the variables. The variable with the strongest indicator of multicollinearity (selfebtv, vif=14.231) was then removed. The categorical variables representing number times physical activities and healthy eating were taught in school (tpa & the respectively) were binned into dichotomous variable due to sparse responses (see descriptive below). Subsequently auto-variable selection tool in R was employed to identity "best subset" model as Model 4 (see table 1 below).

Table A1

Best Subsets Regression

Model Index	Predictors
1	exptntv
2	exptntv gender
3	exptntv gender tpa2
4	exptntv selfectv gender tpa2
5	exptntv selfectv gender tpa2 the2

6	exptntv selfectv age gender tpa2 the2
7	exptntv selfetv selfectv age gender tpa2 the2

Table A2

Subsets Regression Summary

Model	R-Square	Adj. R- Square	AIC	SBIC	SBC	MSEP	FPE	HSP	APC
1	0.06	0.05	666.98	56.80	677.10	1.29	1.29	0.00	0.96
2	0.0777	0.0690	665.2421	55.15	678.72	1.28	1.28	0.00	0.95
3	0.0864	0.0734	665.2217	55.2202	682.0749	1.2805	1.2800	0.0060	0.9483
4	0.0977	0.0805	664.5320	54.6931	684.7558	1.2767	1.2759	0.0060	0.9453
5	0.1034	0.0819	665.1771	55.4767	688.7715	1.2809	1.2798	0.0060	0.9481
6	0.1046	0.0788	666.8853	57.2788	693.8504	1.2915	1.2900	0.0060	0.9557
7	0.1047	0.0744	668.8700	59.3418	699.2058	1.3040	1.3020	0.0061	0.9645

The resulting model below (model 4) has variables with VIF all less than 2 and was adopted as final model for research question 1.

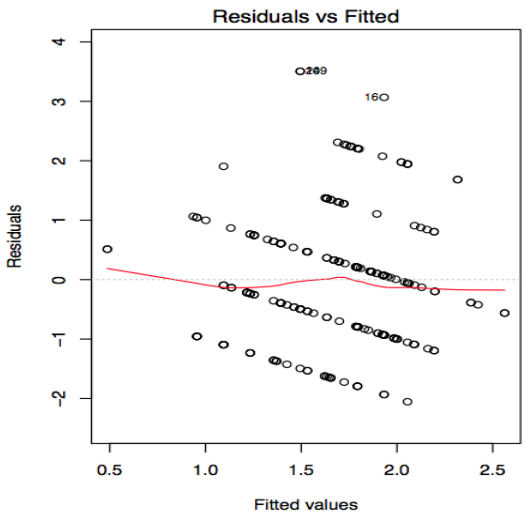
Final model for research question1:

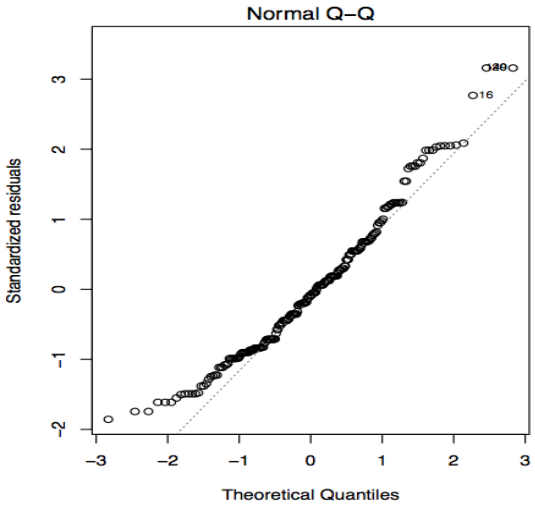
$$Y_{tstv} = \beta_0 + \beta_{exptntv} + \beta_{selfectv} + \beta_{gender} + \beta_{tpa2} + \varepsilon_i$$

See appendix E for definition of variables.

Testing model assumptions for research question 1:

The selected final model was tested for key assumptions of multiple linear regressions. The figures below indicated that deviation from expected perfect outcome was not to the extent that will affect the validity of results. The plot of residual vs. fitted values (fig. 1) indicated that the assumptions





of constant variance was not violated. There was no discernable pattern in these plots and the fitted line seem horizontal indicating that the variance does not change significantly as data value increases. Fig. 2 indicated that deviation from normality was not severe and considered adequate with n=215.

Using 2 hrs. of television watching as demarcation, the logistic regression model below was subsequently used to investigate the relationship between select social construct theory and probability of watching television 2 hrs. between males and females.

$$log\left[\frac{p}{1-p}\right] = \beta_0 + \beta_{gender} + \varepsilon_i$$

where *p* is the probability that the participant watched television for 2 hrs or more within the last 24 hours. Test for model fit for logistics regression was conducted by comparing the null and deviance residual using logistic model above indicated that the model is appropriate ($X^2_{(1)}$ =7.33, P= 0.0068).

Research Question 2

To what extent if any does select social construct theory predict physical activity behavior among the subject population?

A multiple linear regression model including all variables was considered first.

$$Y_{tstv} = \beta_0 + \beta_{exptnpa} + \beta_{selfepa} + \beta_{selfebpa} + \beta_{selfecpa} + \beta_{age} + \beta_{gender} + \beta_{tpa2} + \beta_{the2} + \varepsilon_i$$

See appendix E for definition of variables.

The outcome of analysis indicated that "selfbpa" has comparatively high variance inflation factor (vif>3, compared to about 2 or less for every other variable). Consequently "selfbpa" was removed. The subsequent model has all vif <2. For parsimony, "best subset" auto-selection routine was used to select model 4 (see table 2 below) as the final model:

Table A3 *Best Subsets Regression*

Model Index	Predictors
1	gender
2	age gender
3	selfepa age gender
4	selfepa age gender the2
5	selfepa age gender tpa2 the2
6	selfepa selfecpa age gender tpa2 the2
7	exptnpa selfepa selfecpa age gender tpa2 the2

Table A4

Subsets Regression Summary

Model	R-Square	R- Square	AIC	SBIC	SBC	MSEP	FPE	HSP	APC

1	0.1113	0.1071	1777.6889	1166.9751	1787.8008	226.1568	226.1372	1.0569	0.9054
2	0.1919	0.1842	1759.2546	1148.8231	1772.7371	207.6013	207.5561	0.9701	0.8310
3	0.2360	0.2251	1749.1864	1139.1048	1766.0396	198.1387	198.0612	0.9259	0.7930
4	0.2574	0.2433	1745.0596	1135.2823	1765.2835	194.4148	194.2965	0.9085	0.7779
5	0.2585	0.2407	1746.7576	1137.0713	1770.3521	196.0087	195.8382	0.9160	0.7841
6	0.2586	0.2372	1748.7192	1139.1122	1775.6843	197.8671	197.6349	0.9247	0.7913
7	0.2587	0.2336	1750.6958	1141.1676	1781.0316	199.7664	199.4625	0.9335	0.7986

Final model for research question 2:

$$Y_{tspa} = \beta_{selfepa} + \beta_{age} + \beta_{gender} + \beta_{the2} + \varepsilon_i$$

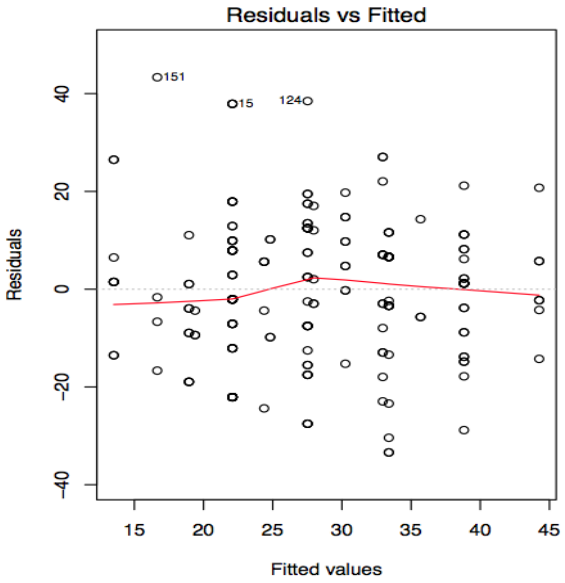
Testing model assumptions for research question 2:

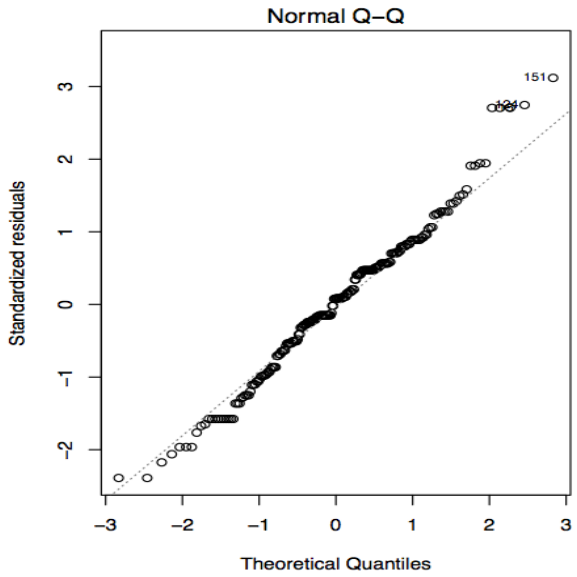
The selected final model was tested for key assumptions of multiple linear regressions. The figures below indicated that deviation from expected perfect outcome was not to the extent that will affect the validity of results. The plot of residual vs. fitted values (fig. 3) indicated that the assumptions of constant variance was not violated. There was no discernable pattern in these plots and the fitted line seem more or less horizontal indicating that the variance does not change significantly as data value increases.

Fig. 4 indicated that deviation from normality was not too severe and considered adequate with n=215.

Fig 3

Fig 4





Using 30 minutes of exercise as demarcation, the logistic regression model below was used to investigate the relationship between select social construct theory and probability of exercising 30min or more between males and females

$$log\left[\frac{p}{1-p}\right] = \beta_0 + \beta_{gender} + \varepsilon_i$$

where *p* is the probability that the participant exercised 30min or more within the last 24 hours.

Test for model fit for logistics regression was conducted by comparing the null and

deviance residual using logistic model above indicated that the model is appropriate ($X^2_{(1)}$ =28.3, P<0.0001).

Research Question 3

To what extent if any does select social construct theory predict water consumption among the subject population?

In order to address this question, a multiple linear regression model including all variables of interest was considered first.

$$Y_{tstv} = \beta_0 + \beta_{exptntv} + \beta_{selfetv} + \beta_{selfebtv} + \beta_{selfectv} + \beta_{age} + \beta_{gender} + \beta_{tpa2} + \beta_{the2} + \varepsilon_i$$

See Appendix E for definition of variables.

The outcome of analysis indicated that "selfebdw" has the highest variance inflation factor (vif>12). Consequently "selfebdw" was removed. The resulting model has all vif <3. "best subset" auto-selection routine was used to select model 5 (see table 3 below) as the final model:

Table A5

Best Subsets Regression

Model Index	Predictors

1	selfecdw
2	selfecdw age
3	selfedw selfecdw age
4	selfecdw age tpa2 the2
5	selfedw selfecdw age tpa2 the2
6	exptndw selfedw selfecdw age tpa2 the2
7	exptndw selfedw selfecdw age gender tpa2 the2

Subsets Regression Summary

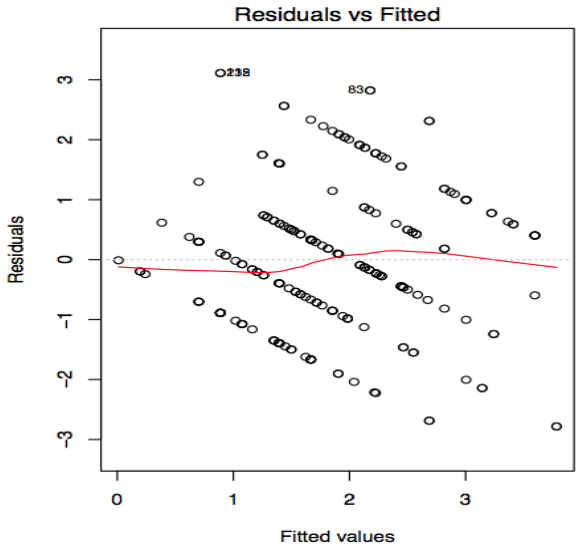
Model	R-Square	Adj. R- Square	AIC	SBIC	SBC	MSEP	FPE	HSP	APC
1	0.2161	0.2124	722.4246	111.9919	732.5365	1.6703	1.6702	0.0078	0.7987
2	0.2416	0.2345	717.2931	106.9157	730.7757	1.6312	1.6308	0.0076	0.7798
3	0.2594	0.2489	714.1913	103.9240	731.0444	1.6081	1.6074	0.0075	0.7687
4	0.2729	0.2591	712.2309	102.1164	732.4547	1.5938	1.5929	0.0074	0.7617
5	0.2909	0.2739	708.8582	99.0524	732.4527	1.5694	1.5681	0.0073	0.7498
6	0.2951	0.2748	709.5629	99.8999	736.5280	1.5751	1.5732	0.0074	0.7523
7	0.2979	0.2742	710.7025	101.1743	741.0382	1.5840	1.5816	0.0074	0.7563

Final model for research question 3

$$Y_{gow} = \beta_{selfedw} + \beta_{selfecdw} + \beta_{age} + \beta_{tpa2} + \beta_{the2} + \varepsilon_i$$

Testing Model Assumptions for Research Question 3:

The selected final model was tested for key assumptions of multiple linear regressions. The figures below indicated that deviation from expected perfect outcome was not to the extent that will affect the validity of results. The plot of residual vs. fitted values (fig. 6) indicated that the assumptions of constant variance was not violated. There was no discernable pattern in these plots and the fitted line seem horizontal indicating that the variance does not change significantly as data value increases. Fig. 7 indicated that deviation from normality was not severe and considered adequate with n=215.



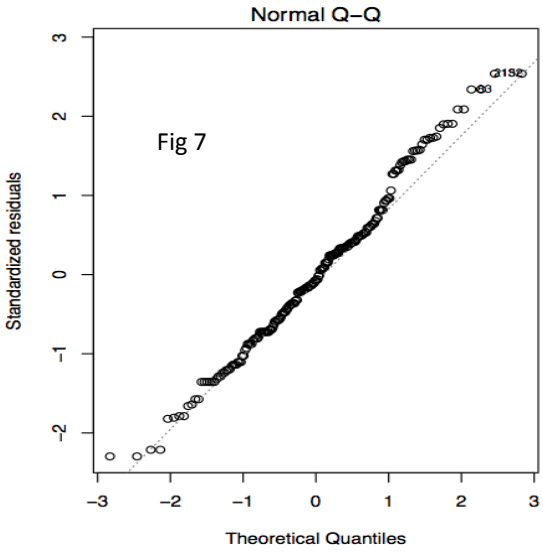


Figure 6

Figure 7

Logistic regression model was not implemented for research question 3 because all responses were below the demarcation value of eight glasses of water.

Research Question 4

To what extent if any does select social construct theories predict fruit and vegetable intake among the subject population?

Multiple linear regression model including all variables of interest was considered first.

$$Y_{tstv} = \beta_0 + \beta_{exptntv} + \beta_{selfetv} + \beta_{selfebtv} + \beta_{selfectv} + \beta_{age} + \beta_{gender} + \beta_{tpa2} + \beta_{the2} + \varepsilon_i$$

See appendix E for definition of variables.

The outcome of initial analysis indicated that "selfebsofv" has the highest variance inflation factor (vif>22). Consequently "selfebsofv" was removed. In the resulting model, "selfesofv" has comparatively high vif (>5) and was subsequently removed. Thereafter, "best subset" auto-selection routine was used to select model 4 (see Table 4) as the final model:

Table A6

Best Subsets Regression

Model Index	Predictors
1	selfecsofv
2	selfecsofv age
3	exptnsofv selfecsofv age
4	exptnsofv selfecsofv age gender
5	exptnsofv selfecsofv age gender tpa2
6	exptnsofv selfecsofv age gender tpa2 the2

Subsets Regression Summary

Model	R-Square	Adj. R- Square	AIC	SBIC	SBC	MSEP	FPE	HSP	APC
1	0.2035	0.1997	928.6105	318.0021	938.7224	4.3581	4.3577	0.0204	0.8115
2	0.2615	0.2545	914.3531	303.9647	927.8356	4.0790	4.0781	0.0191	0.7594
3	0.2854	0.2752	909.2802	299.0712	926.1334	3.9846	3.9830	0.0186	0.7417
4	0.3020	0.2887	906.2048	296.2160	926.4287	3.9288	3.9264	0.0184	0.7312
5	0.3125	0.2961	904.9500	295.1767	928.5444	3.9070	3.9036	0.0183	0.7269
6	0.3143	0.2945	906.4011	296.7264	933.3662	3.9347	3.9301	0.0184	0.7319

Final model for research question 4

$$Y_{sofv} = \beta_0 + \beta_{exptnsofv} + \beta_{selfecsofv} + \beta_{age} + \beta_{gender} + \varepsilon_i$$

See appendix E for definition of variables.

Testing Model Assumptions for Research Question 4:

The selected final model was tested for key assumptions of multiple linear regressions. The figures below indicated that deviation from expected perfect outcome was not to the extent that will affect the validity of results. The plot of standardized residual vs. fitted values (fig. 8) indicated that the assumptions of constant variance was not severely violated. There was no discernable pattern in these plots and the fitted line seem horizontal, apart from lower predicted values, indicating that the variance does not change significantly as data value increases. Fig. 9 indicated there is deviation from normality, simple transformations (log and square root of response variable) did not adequately correct this deviation from normality. However, given fairly large sample size (n=215), we know that by central limit theorem, the inference will still yield relatively valid result.

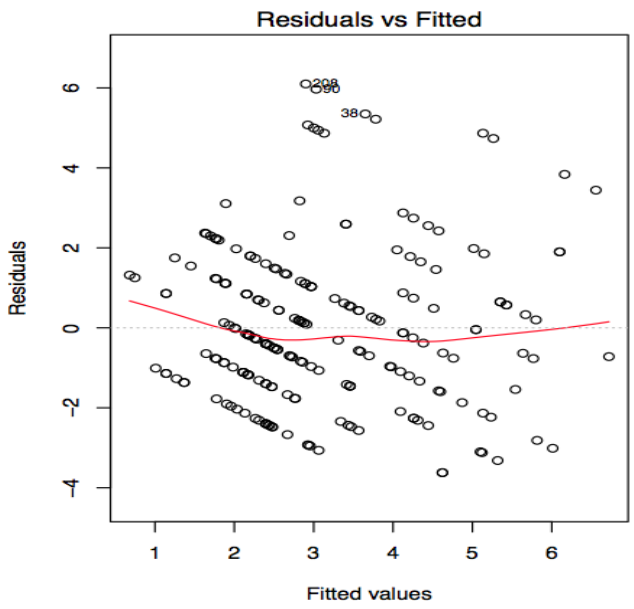


Figure 8

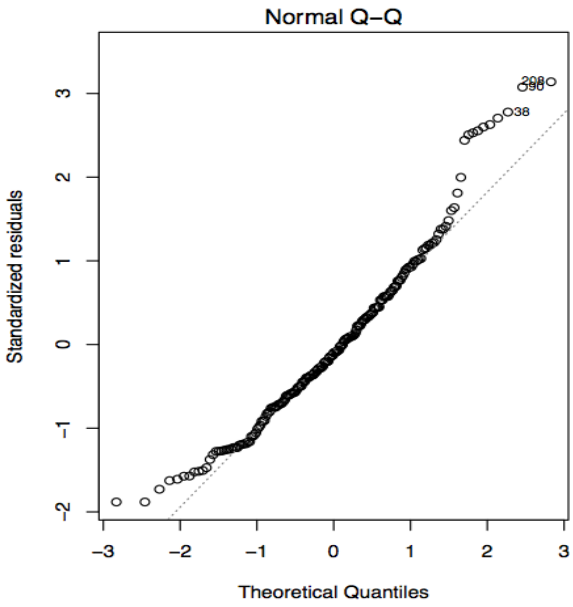


Figure 9

A logistic regression model could not be implemented for research question 4 because only four of the responses were above the demarcation value of 5 servings of fruit and 5 servings of vegetable.

Research Question 5

To what extent if any does select social construct theory predict portion size among the subject population? The number of respondents whose typical meal portion size are small or very large were both less than 5 (4 & 3 respectively). Meal portion size was therefore binned to create a dichotomous variable (small or medium=0, and large or very large = 1). The following model was used to analysis the data:

$$log\left[\frac{p}{1-p}\right] = \beta_0 + \beta_{exptnsps} + \beta_{selfesps} + \beta_{selfebsps} + \beta_{selfecsps} + \beta_{age} + \beta_{gender} + \beta_{tpa2} + \beta_{the2} + \varepsilon_i$$

where *p* is the probability that the participant's typical meal portion size is large or very large

Test for logistic regression model fit:

Test for model fit for logistics regression was conducted by comparing the null and deviance residual using logistic model above indicated that the model is appropriate ($X^2_{(8)}$ =52.4, *P* <0.0001).

Appendix D: Code Book

HEALTH FOR ALL

Promoting Healthy Lifestyles: Survey

s/n	Variable Name & Description	Variable name (coding)	Data Type	Format
1	**Age:** Students age, ranging from less than 11 to more than 16yrs	Age	Categorical	Ordinal: >11yrs, 12yrs, 13yrs, 14yrs, 15yrs, 16yrs, >16yrs

2	**Gender:** Male /female	Sex	Categorical	Nominal: male=1, female=0
3	**Race:** African American refers to African American or African American, Indian refers to Indian American	Race	Categorical	Nominal: Caucasian=1, African American=2, Hispanic American=3, Asian=4, Indian=5, other=6
4	**Taught about healthy eating:** number of times students were taught in school the past one week.	the (the2=binary coding 2orless|>2)	Categorical	Ordinal: Never=0, once=1, twice=2, three or more times=3
5	**Taught about physical activity or exercise:** number of times students were taught in school the past one week.	tpa (tpa2=binary coding 2orless|>2)	Categorical	Ordinal: Never=0, once=1, twice=2, three or more times=3
6	**Time spent on physical activity or exercise in past 24 hours**	tspa (tspa2=binary coding)	Numerical	Continuous /categorical variable Less than 30 min (0), 30min or more (1)
7	**Time spent watching TV in past 24 hours**	tstv (tstv2=binary coding)	Numerical	Continuous /categorical variable Less than 2 hrs (0), 2 hrs or more (1)

8	**Glasses of water:** Number of glasses of water student drank in the past 24 hours	Gow	Numerical	Continuous /categorical variable Less than 8 glasses (0), 8 glasses or more (1)
9	**Servings of fruit:** Number of servings of fruit student ate in the past 24 hours	Sof	Numerical	Continuous /categorical variable Less than 5 servings (0), 5 servings or more (1)
10	**Servings of vegetable:** Number of servings of vegetable student ate in the past 24 hours	Sov	Numerical	Continuous /categorical variable Less than 5 servings (0), 5 servings or more (1)
10b	**Total Servings of fruits & vegetable: Total** number of servings of fruits and vegetable student ate in the past 24 hours	Sofv	Numerical	Continuous
11	**Meal Portion size:** Students typical meal portion size	Mps (mps2)	Categorical	Ordinal: small =1, medium=2, large=3, very large=4 [for mps2: small or medium =0 while

				large or very large=1]
	Motivation (mpa): If I exercise 30 min. daily at home I will . . .			
12	**…not get sick as often**	mpa_12	Likert Scale	Scale of 0 to 4: Never=0, Hardly ever=1, Sometimes=2, Almost Always=3, Always=4
13	**…have more confidence**	mpa_13	Likert Scale	Scale of 0 to 4: Never=0, Hardly ever=1, Sometimes=2, Almost Always=3, Always=4
14	**…have more fun**	mpa_14	Likert Scale	Scale of 0 to 4: Never=0, Hardly ever=1, Sometimes=2, Almost Always=3, Always=4
15	**…look better**	mpa_15	Likert Scale	Scale of 0 to 4: Never=0, Hardly ever=1, Sometimes=2, Almost Always=3, Always=4

	Motivation (mtv) If I watch TV less than 2 hours/day I will...			
16	**… have more friends.**	mtv_16	Likert Scale	Scale of 0 to 4: Never=0, Hardly ever=1, Sometimes=2, Almost Always=3, Always=4
17	**…have more free time.**	mtv_17	Likert Scale	Scale of 0 to 4: Never=0, Hardly ever=1, Sometimes=2, Almost Always=3, Always=4
18	**…have more fun.**	mtv_18	Likert Scale	Scale of 0 to 4: Never=0, Hardly ever=1, Sometimes=2, Almost Always=3, Always=4
19	**…be more relaxed.**	mtv_19	Likert Scale	Scale of 0 to 4: Never=0, Hardly ever=1, Sometimes=2, Almost Always=3, Always=4
	Motivation (mgow): If I drink water instead of sweetened beverages I will . . .			
20	**…be more relaxed.**	mgow_20	Likert Scale	Scale of 0 to 4: Never=0, Hardly ever=1, Sometimes=2, Almost

				Always=3, Always=4
21	**…feel better.**	mgow_21	Likert Scale	Scale of 0 to 4: Never=0, Hardly ever=1, Sometimes=2, Almost Always=3, Always=4
22	**…have more energy.**	mgow_22	Likert Scale	Scale of 0 to 4: Never=0, Hardly ever=1, Sometimes=2, Almost Always=3, Always=4
23	**…have better weight.**	mgow_23	Likert Scale	Scale of 0 to 4: Never=0, Hardly ever=1, Sometimes=2, Almost Always=3, Always=4
	Motivation (msov): If I eat 5 or more servings of fruits and vegetables I will . . .			
24	**… have more energy.**	msov_24	Likert Scale	Scale of 0 to 4: Never=0, Hardly ever=1, Sometimes=2, Almost Always=3, Always=4
25	**…feel better.**	msov_25	Likert Scale	Scale of 0 to 4: Never=0, Hardly

				ever=1, Sometimes=2, Almost Always=3, Always=4
26	**…not get sick as often.**	msov_26	Likert Scale	Scale of 0 to 4: Never=0, Hardly ever=1, Sometimes=2, Almost Always=3, Always=4
27	**…have better weight.**	msov_27	Likert Scale	Scale of 0 to 4: Never=0, Hardly ever=1, Sometimes=2, Almost Always=3, Always=4
	Motivation (mmps): If I eat smaller portion size I will…			
28	**…have better weight.**	mmps_28	Likert Scale	Scale of 0 to 4: Never=0, Hardly ever=1, Sometimes=2, Almost Always=3, Always=4
29	**…have more energy.**	mmps_29	Likert Scale	Scale of 0 to 4: Never=0, Hardly ever=1, Sometimes=2, Almost Always=3, Always=4

30	**…feel better.**	mmps_30	Likert Scale	Scale of 0 to 4: Never=0, Hardly ever=1, Sometimes=2, Almost Always=3, Always=4
31	**…be more relaxed.**	mmps_31	Likert Scale	Scale of 0 to 4: Never=0, Hardly ever=1, Sometimes=2, Almost Always=3, Always=4
	Motivation (mimp): How important is it to you that you . . .			
32	**… not get sick as often?**	mimp_32	Likert Scale	Scale of 0 to 4: Not at All important=0, Slightly important = 1, Moderately important = 2, Very important = 3,Extremely Important =4
33	**…have more confidence?**	mimp_33	Likert Scale	Scale of 0 to 4: Not at All important=0, Slightly important = 1, Moderately important = 2, Very important = 3, Extremely Important =4
34	**…have more fun?**	mimp_34	Likert Scale	Scale of 0 to 4: Not at All important=0, Slightly important

				= 1, Moderately important = 2, Very important = 3, Extremely Important =4
35	**…look better?**	mimp_35	Likert Scale	Scale of 0 to 4: Not at All important=0, Slightly important = 1, Moderately important = 2, Very important = 3, Extremely Important =4
36	**… have more friends?**	mimp_36	Likert Scale	Scale of 0 to 4: Not at All important=0, Slightly important = 1, Moderately important = 2, Very important = 3, Extremely Important =4
37	**…have more free time?**	mimp_37	Likert Scale	Scale of 0 to 4: Not at All important=0, Slightly important = 1, Moderately important = 2, Very important = 3, Extremely Important =4
38	**…be more relaxed?**	mimp_38	Likert Scale	Scale of 0 to 4: Not at All important=0, Slightly important = 1, Moderately important = 2, Very important =

				3, Extremely Important =4
39	**…feel better?**	mimp_39	Likert Scale	Scale of 0 to 4: Not at All important=0, Slightly important = 1, Moderately important = 2, Very important = 3, Extremely Important =4
40	**…have more energy**	mimp_40	Likert Scale	Scale of 0 to 4: Not at All important=0, Slightly important = 1, Moderately important = 2, Very important = 3, Extremely Important =4
41	**…have better weight?**	mimp_41	Likert Scale	Scale of 0 to 4: Not at All important=0, Slightly important = 1, Moderately important = 2, Very important = 3, Extremely Important =4
	Motivation (msure): How sure are you that you can . . .			
42	… exercise every day for 30 minutes at home?	msure_42	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4

43	… exercise for 30 minutes at home even if you are tired?	msure_43	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4
44	… exercise for 30 minutes at home even if you are busy?	msure_44	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4
45	… set goals to exercise every day for 30 minutes at home?	msure_45	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4
46	… reward yourself with something you like for exercising?	msure_46	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4
47	… watch TV no more than 2 hours per day?	msure_47	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4
48	… reduce watching TV even if your favorite shows are coming?	msure_48	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1,

				Moderately sure = 2, Very sure = 3, Completely sure = 4
49	… reduce watching TV even if everyone else in the family is watching?	msure_49	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4
50	… set goals to watch TV to no more than 2 hours per day?	msure_50	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4
51	… reward yourself with something you like for reducing watching TV?	msure_51	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4
52	… drink more water?	msure_52	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4
53	… drink water every day instead of sweet drinks?	msure_53	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3,

				Completely sure = 4
54	… drink more water every day even if you do not feel thirsty?	msure_54	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4
55	… set goals to replace sweet drinks with water every day?	msure_55	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4
56	… reward yourself with something you like for drinking water instead of sweet drinks?	msure_56	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4
57	…eat 5 or more servings of fruits and vegetables every day?	msure_57	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4
58	…eat 5 or more servings of fruits and vegetables every day even if you do not like them?	msure_58	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4

59	… eat 5 or more servings of fruits and vegetables every day even if others in your family do not like them?	msure_59	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4
60	…set goals to eat 5 or more servings of fruits and vegetables?	msure_60	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4
61	… reward yourself with something you like for eating 5 or more servings of fruits and vegetables every day?	msure_61	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4
62	…eat smaller portion sizes?	msure_62	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4
63	… eat smaller portion sizes even when you are hungry?	msure_63	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4

64	… eat smaller portion sizes even when family members force you to eat?	msure_64	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4
65	…set goals to eat smaller portion sizes?	msure_65	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4
66	… reward yourself with something you like for eating smaller portion sizes?	msure_66	Likert Scale	Scale of 0 to 4: Not at all sure =0, Slightly sure= 1, Moderately sure = 2, Very sure = 3, Completely sure = 4